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Resource diversity of Chinese macrofungi: edible, medicinal and poisonous species

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Abstract

The huge land areas in China provide highly diverse habitats for macrofungi. Of these macrofungi, many are directly related to people's daily life and have been utilized by ancient Chinese for at least 6800 years. In this study, we evaluate the current known resource diversity of Chinese macrofungi. A total of 1662 taxa are summarized, and all species names and their authorities have been checked and corrected according to authentic mycological databases. Among the 1662 taxa, 1020, 692, and 480 are considered to be edible, medicinal and poisonous mushrooms, respectively. A few of edible macrofungi in China are commonly used for commercial production. All known medicinal functions are labeled for medicinal species. The most common medicinal functions possessed by Chinese macrofungi are antitumor or anticancer, followed by antioxidant and antimicrobial. A total of 277 Chinese macrofungi are edible simultaneously with certain medicinal functions and without known toxicity. These species could be treated as “Gold Mushrooms”. Contrarily, 193 edible and/or medicinal species are also recognized as poisonous mushrooms. To avoid poisoning caused by these species, ingestion either in a proper way or in small amounts is important. However, the mycotoxins metabolized by these poisonous species could be a huge wealth of natural products yet to be explored. How to utilize these Chinese macrofungal resources is a critical to benefit humans worldwide.

Keywords Economic fungi · Edible mushroom · Fungal toxicity · Medicinal function · Nomenclature

Fang Wu and Li-Wei Zhou contributed equally to this paper

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Introduction

Macrofungi have been used as an important kind of foods and medications in some ancient civilizations worldwide for thousands of years (Anonymous 1955). For example, the latest archaeological evidence indicated that the earliest use of *Ganoderma* spp. could date back 6800 years ago in Neolithic China (Yuan et al. 2018b). On the other side, the toxicity of a poisonous macrofungus *Amanita muscaria* (L.) Lam. helped humans to kill flies in medieval Europe.

In China, people began to collect wild mushrooms as food since ancient times (Zhang et al. 2015b). Nowadays, hundreds of wild species are still commonly collected and eaten around China, especially in southwestern and northeastern parts. The cultivation of mushrooms dated back the Tang Dynasty (618–907 AD). It was recorded that the artificial cultivation of *Lentinula edodes* (Berk.) Pegler was invented about 800 years ago in the Song Dynasty. In recent years, mushroom cultivations have become the fifth largest agriculture industry in China. Around 200 species have been successfully cultivated in laboratories, nearly

100 edible mushroom species have been domesticated, and 60 of them have been commercially cultivated (Zhang et al. 2015b). In 2010, a total of 966 taxa (936 species, 23 varieties, 3 subspecies and 4 forms) were summarized as edible macrofungi in China (Dai et al. 2010).

The Chinese also discovered that some macrofungi possessed medicinal properties. The history of the utilization of medicinal fungi is much longer than the cultivation of edible species in China. The earliest known Chinese medicinal book, *Shen Nong Materia Medica* published 2000 years ago, recorded *Ganoderma* sp. (Lingzhi), *Wolfiporia cocos* (China root) and some other medicinal macrofungi (Anonymous 1955). The *Compendium Materia Medica*, the most well-known Chinese medicinal book, also summarized some medicinal fungi (Li 1957, originally published in 1578). In the last three decades, several monographs mentioned the diversity of medicinal macrofungi in China (Liu 1984; Ying et al. 1987; Mao 1998). In 2009, the latest checklist so far reviewed 540 Chinese medicinal species of macrofungi (Dai et al. 2009).

Along with the utilization of wild edible and medicinal mushrooms, more cases of poisoning have been reported in China. This is partially due to wrong methods of cooking or eating (Li and Bao 2018; Bao et al. 2019), but mostly caused by consuming poisonous species (Xiang et al. 2017), in which the toxins are not destroyed by high temperatures when cooking. The latest checklist of Chinese poisonous mushrooms summarized 435 taxa in 2014 (Bau et al. 2014).

In the case that so many edible and medicinal resources of macrofungi can be found in China, related studies on these kinds of resources have greatly increased. In the last decade, many monographs and papers referring to edible and medicinal fungi have been published in scattered resources, which updated the resource diversity recorded in Dai et al. (2009, 2010). Updates include newly described edible and medicinal taxa, while the edibility or medicinal functions of previously known species have been newly revealed, or their taxonomic positions and scientific binomials have been changed. Some poisoning cases caused by previously undescribed and known mushrooms since Bau et al. (2014) have also revealed that these macrofungal species are poisonous. In addition, most of the previous data on edible and poisonous macrofungi were published in Chinese, and they are not well-known outside of China. Therefore, to facilitate the access to this knowledge, to improve fungal industry development and to support the mushroom collectors' safety, a comprehensive updated resource evaluation of Chinese edible, medicinal and poisonous macrofungi is needed.

Criterion

In this study, we use the records of Dai et al. (2009, 2010) and Bau et al. (2014) as foundations, and append the information of edible, medicinal and poisonous macrofungi thereafter published in monographs and papers as well as our unpublished data. Moreover, all taxon names and authorities are rechecked according to the records updated by January 1, 2019 in the authentic mycological databases, namely Index Fungorum (<http://www.indexfungorum.org/>) and MycoBank Database (<http://www.mycobank.org/>).

Noteworthy, the latest and the first *State of the World's Fungi 2018* (stateoftheworldsfungi.org) mentioned that 1789 edible and 798 medicinal fungal species have been reported from China. However, no data (e.g. detailed checklist) of these species was provided. Moreover, these edible and medicinal species names are also unavailable, at least not directly available to us, via the website (<http://124.16.146.175:8080/checklist/checklist.html>) cited in this report. Therefore, we could not use this data in the current resource evaluation.

Resource evaluation

A total of 1662 Chinese taxa are summarized in this study, of which 1020, 692 and 480 are considered to be edible, medicinal and poisonous macrofungi, respectively (Table 1). Compared with Dai et al. (2009, 2010) and Bau et al. (2014), the numbers of edible, medicinal and poisonous taxa are increased by 54, 152, and 45, respectively. The increase of edible fungi, accounting for 5% of the previous checklist (Dai et al. 2010), is not tremendous, but the species themselves have changed. Of these species, 265 species in the previous checklist (Dai et al. 2010), accounting for 27%, are resolved; 227 medicinal and 27 poisonous species, account for 42% of the previous medicinal checklist (Dai et al. 2009), and 10% of the previous poisonous checklist (Bau et al. 2014) are changed. That is due to the fact that some species were newly included here and others were excluded in the previous checklists. Moreover, some macrofungi in the previous checklists (Dai et al. 2009, 2010; Bau et al. 2014) have undergone taxonomic changes.

The increase of edible macrofungi is partially contributed by the newly described edible species. This is mainly from the genera *Agaricus* L. (Gui et al. 2015; Wang et al. 2015g; Zhang et al. 2017e), *Amanita* Pers. (Endo et al. 2017; Cui et al. 2018), *Auricularia* Bull. (Wu et al. 2015a, b), *Boletus* L. (Zeng et al. 2014; Cui et al. 2016), *Butyriboletus* D. Arora & J.L. Frank (Wu et al. 2016a), *Cantharellus* Adans. ex Fr. (Shao et al. 2011), *Craterellus*

Table 1 A checklist of Chinese macrofungal resources

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>Abortiporus biennis</i> (Bull.) Singer | | Antitumor (Dai et al. 2009; Zuchowski et al. 2009; Zhang et al. 2011a); immunomodulation (Liu et al. 2017g) | |
| <i>Agaricus abruptibulbus</i> Peck | E | | P |
| <i>A. altipes</i> (F.H. Møller) F.H. Møller | E | | |
| <i>A. argyropotamicus</i> Speg. | E | | |
| <i>A. arvensis</i> Schaeff. | E | Treating lumbago and skelalgia, and limb numbness (Dai et al. 2009); antioxidant, antitumor (Zhao et al. 2011a; Munkhgerel et al. 2013) | |
| <i>A. augustus</i> Fr. | E | | |
| <i>A. balchaschensis</i> Samgina & G.A. Nam | E | | |
| <i>A. benesii</i> (Pilát) Pilát | E | | |
| <i>A. bernardii</i> Quéf. | E | | P |
| <i>A. bisporus</i> (J.E. Lange) Imbach | E | Promoting digestion, lowering blood pressure, antibacteria, antitumor (Dai et al. 2009); antioxidant, immunomodulation (Kozarski et al. 2011; Tian et al. 2012; Liu et al. 2013b; Wu et al. 2018a) | |
| <i>A. bitorquis</i> (Quéf.) Sacc. | E | Anticholinesterase, antimicrobial, antioxidant, anti-fatigue, anti-hypoxia (Öztiürk et al. 2011; Jiao et al. 2018b, c) | |
| <i>A. blazei</i> Murrill | E | Lowering blood pressure, antitumor (Dai et al. 2009; Yang et al. 2017a); anti-fatigue, anti-infection, anti-inflammation, immunomodulation, protection of lead-induced immune system damage (Padilha et al. 2009; Endo et al. 2010; Cheng et al. 2012; Li et al. 2013b; Li and Wei 2017; Ren et al. 2018a) | |
| <i>A. bresadolanus</i> Bohus | E | Antioxidant (Kalyoncu et al. 2010) | |
| <i>A. californicus</i> Peck | | | P |
| <i>A. campestris</i> L. | E | Treating anemia, dermatophytosis and hypopepsia, antibacteria, antitumor (Dai et al. 2009) | |
| <i>A. cappellianus</i> Hlaváček | E | | |
| <i>A. comtulus</i> Fr. | E | | |
| <i>A. croceoplus</i> Berk. & Broome | E | Antioxidant (Liu et al. 2013a) | |
| <i>A. desjardinii</i> Zhuo R. Wang et al. | E | | |
| <i>A. devoniensis</i> P.D. Orton | E | Antimicrobial, antioxidant (Rezaeian et al. 2015; Shen et al. 2017a) | |
| <i>A. dulcidulus</i> Schulzer | E | Antitumor, promoting digestion (Dai et al. 2009) | P |
| <i>A. edulis</i> Bull. | E | | |
| <i>A. gennadii</i> (Chatin & Boud.) P.D. Orton | E | Antibacteria, antioxidant (Rezaeian et al. 2015; Fu et al. 2016; Soltanian et al. 2016; Zhao et al. 2017b) | |
| <i>A. guizhouensis</i> Y. Gui et al. | E | | |
| <i>A. halophilus</i> Peck | E | | |
| <i>A. langei</i> (F.H. Møller) F.H. Møller | E | | |
| <i>A. lanipes</i> (F.H. Møller & Jul. Schäff.) Hlaváček | E | Antimicrobial, antioxidant, antitumor (Kaygusuz et al. 2017) | |
| <i>A. lepiotiformis</i> Yu Li | E | | |
| <i>A. litoralis</i> (Wakef. & A. Pearson) Pilát | E | | |
| <i>A. micromegethus</i> Peck | E | Antitumor, promoting digestion (Dai et al. 2009) | |
| <i>A. moelleri</i> Wasser | | | P |
| <i>A. osecanus</i> Pilát | E | | |
| <i>A. padanus</i> Lancon. | E | | |
| <i>A. pequinii</i> (Boud.) Konrad & Maubl. | | | P |
| <i>A. pilatianus</i> (Bohus) Bohus | E | | |
| <i>A. placomyces</i> Peck | E | Antitumor (Dai et al. 2009; Sun et al. 2012a); antiviral (Sun et al. 2012a) | |
| <i>A. platypus</i> Cooke & Massee | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|---|------------------------------|
| <i>A. praerimosus</i> Peck | E | | |
| <i>A. pratensis</i> Schaeff. | E | | |
| <i>A. qilianensis</i> S.L. Wei et al. | E | | |
| <i>A. rubribrunnescens</i> Murrill | E | | |
| <i>A. rusiophyllus</i> Lasch | E | | |
| <i>A. semotus</i> Fr. | E | | P |
| <i>A. sinodeliciosus</i> Zhuo R. Wang & R.L. Zhao | E | | |
| <i>A. sinotetrasporus</i> Y.L. Xi et al. | E | | |
| <i>A. squarrosus</i> Yu Li | E | | |
| <i>A. subrufescens</i> Peck | E | Antitumor (Dai et al. 2009); antioxidant (Wang and Xu 2014) | |
| <i>A. subrutilescens</i> (Kauffman) Hotson & D.E. Stuntz | E | Antitumor (Dai et al. 2009) | |
| <i>A. sylvaticus</i> Schaeff. | E | Antibacteria, anticancer, anticomplement, antioxidant, antiviral, decreasing parasitaemia, immunostimulant, reducing oxidative stress (Munkhgerel et al. 2011; Figueira et al. 2014; Quadros Gomes et al. 2015) | |
| <i>A. sylvicola</i> (Vittad.) Peck | E | | |
| <i>A. urinascens</i> (Jul. Schäff. & F.H. Møller) Singer | E | Antioxidant (Ekin et al. 2015) | |
| <i>A. xanthodermus</i> Genev. | | Antimicrobial (Bala et al. 2012) | P |
| <i>Agrocybe cylindracea</i> (DC.) Maire | E | Inducing diuresis, invigorating the spleen, improving immunity, antitumor, antidiarrheal, antifungus (Dai et al. 2009; Čilerdžić et al. 2015); antioxidant, anti-nematode (Zhao et al. 2009; Čilerdžić et al. 2015) | |
| <i>A. dura</i> (Bolton) Singer | E | Antibacteria, antifungus (Dai et al. 2009) | |
| <i>A. erebia</i> (Fr.) Kühner ex Singer | E | Antitumor (Dai et al. 2009) | |
| <i>A. farinacea</i> Hongo | E | | P |
| <i>A. paludosa</i> (J.E. Lange) Kühner & Romagn. ex Bon | | Antitumor (Dai et al. 2009) | |
| <i>A. pedicades</i> (Fr.) Fayod | E | Antitumor (Dai et al. 2009); antibacteria (Al-Fatimi et al. 2013) | |
| <i>A. praecox</i> (Pers.) Fayod | E | Antitumor (Dai et al. 2009) | |
| <i>A. salicaceicola</i> Zhu L. Yang et al. | E | | |
| <i>A. tibetensis</i> (Masse) Guzmán | | | P |
| <i>Albatrellus caeruleoporus</i> (Peck) Pouzar | | Antioxidant (Li et al. 2014d) | |
| <i>A. confluens</i> (Alb. & Schwein.) Kotl. & Pouzar | E | Lowering cholesterol (Dai et al. 2009); antitumor (Luo et al. 2011b) | |
| <i>A. cristatus</i> (Schaeff.) Kotl. & Pouzar | E | | |
| <i>A. dispansus</i> (Lloyd) Canf. & Gilb. | E | | P |
| <i>A. ellisii</i> (Berk.) Pouzar | E | Antioxidant (Xie et al. 2015b) | |
| <i>A. flettii</i> Morse ex Pouzar | E | Antibacteria (Liu et al. 2010) | |
| <i>A. fumosus</i> H.D. Zheng & P.G. Liu | E | | |
| <i>A. ovinus</i> (Schaeff.) Kotl. & Pouzar | E | Reducing effects of Alzheimer (Dai et al. 2009); antioxidant, relief of heat pain on hyperalgesic skin (Li et al. 2014d; Wei and Li 2016; Hettwer et al. 2017) | |
| <i>A. pes-caprae</i> (Pers.) Pouzar | E | | |
| <i>A. piceiphilus</i> B.K. Cui & Y.C. Dai | E | | |
| <i>A. skamanius</i> (Murrill) Pouzar | E | | |
| <i>A. syringae</i> (Parmasto) Pouzar | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|---|------------------------------|
| <i>A. tianschanicus</i> (Bondartsev) Pouzar | E | | |
| <i>A. tibetanus</i> H.D. Zheng & P.G. Liu | E | | |
| <i>A. yasudae</i> (Lloyd) Pouzar | E | | |
| <i>A. yunnanensis</i> H.D. Zheng & P.G. Liu | E | | |
| <i>A. zhuangii</i> Y.C. Dai & Juan Li | E | | |
| <i>Aleuria aurantia</i> (Pers.) Fuckel | E | Immunomodulation (Chen et al. 2012c) | P |
| <i>Aleurodiscus amorphus</i> (Pers.) J. Schröt. | | Antitumor (Dai et al. 2009) | |
| <i>A. mirabilis</i> (Berk. & M.A. Curtis) Höhn. | | Antibacteria (Dai et al. 2009) | |
| <i>Alloclavaria purpurea</i> (Fr.) Dentinger & D.J. McLaughlin | E | | |
| <i>Amanita avellaneosquamosa</i> (S. Imai) S. Imai | | Treating lumbago and skelalgia, and limb numbness (Dai et al. 2009) | P |
| <i>A. caesareoides</i> Lj. N. Vassiljeva | E | | |
| <i>A. caojizong</i> Zhu L. Yang et al. | E | Antitumor (Dai et al. 2009) | |
| <i>A. castanopsis</i> Hongo | | | P |
| <i>A. chepangiana</i> Tulloss & Bhandary | E | | |
| <i>A. clarisquamosa</i> (S. Imai) S. Imai | | | P |
| <i>A. concentrica</i> T. Oda et al. | | | P |
| <i>A. esculenta</i> Hongo & I. Matsuda | E | | |
| <i>A. exitialis</i> Zhu L. Yang & T.H. Li | | Antitumor (Shu et al. 2007) | P |
| <i>A. farinosa</i> Schwein. | | Antiproliferation (Sun et al. 2011) | P |
| <i>A. flavipes</i> S. Imai | | | P |
| <i>A. fritillaria</i> Sacc. | E | | P |
| <i>A. fuliginea</i> Hongo | | | P |
| <i>A. fuligineoides</i> P. Zhang & Zhu L. Yang | | | P |
| <i>A. griseofolia</i> Zhu L. Yang | | Antieczematic activity (Dai et al. 2009) | |
| <i>A. griseopantherina</i> Y.Y. Cui et al. | | | P |
| <i>A. griseorosea</i> Q. Cai et al. | | | P |
| <i>A. griseoverrucosa</i> Zhu L. Yang | | | P |
| <i>A. gymnopus</i> Corner & Bas | | | P |
| <i>A. hemibapha</i> (Berk. & Broome) Sacc. | E | Antitumor (Dai et al. 2009) | |
| <i>A. hunanensis</i> Y.B. Peng & L.J. Liu | E | | |
| <i>A. ibotengutake</i> T. Oda et al. | | | P |
| <i>A. imazekii</i> T. Oda et al. | E | | |
| <i>A. incarnatifolia</i> Zhu L. Yang | | | P |
| <i>A. japonica</i> Hongo ex Bas | | | P |
| <i>A. kitamagotake</i> N. Endo & A. Yamada | E | | |
| <i>A. kotohiraensis</i> Nagas. & Mitani | | | P |
| <i>A. longistriata</i> S. Imai | | | P |
| <i>A. manginiana</i> Har. & Pat. | | | P |
| <i>A. melleialba</i> Zhu L. Yang et al. | | | P |
| <i>A. melleiceps</i> Hongo | | | P |
| <i>A. mira</i> Corner & Bas | | | P |
| <i>A. molliuscula</i> Q. Cai et al. | | | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>A. muscaria</i> (L.) Lam. | | Antitumor, treating insomnia (Dai et al. 2009); antioxidant (Reis et al. 2011b) | P |
| <i>A. neoovoidea</i> Hongo | | | P |
| <i>A. nivalis</i> Grev. | E | | |
| <i>A. oberwinkleriana</i> Zhu L. Yang & Yoshim. Doi | | | P |
| <i>A. ochracea</i> (Zhu L. Yang) Y.Y. Cui et al. | E | Hemagglutination (Sekete et al. 2014) | |
| <i>A. orientigemmata</i> Zhu L. Yang & Yoshim. Doi | | | P |
| <i>A. orsonii</i> Ash. Kumar & T.N. Lakh. | | | P |
| <i>A. pallidrosea</i> P. Zhang & Zhu L. Yang | | Antifungus (Wang et al. 2011b) | P |
| <i>A. parviexitialis</i> Q. Cai et al. | | | P |
| <i>A. parvipantherina</i> Zhu L. Yang et al. | | | P |
| <i>A. pseudogemmata</i> Hongo | | | P |
| <i>A. pseudopantherina</i> Zhu L. Yang ex Y.Y. Cui et al. | | | P |
| <i>A. pseudoporphyrina</i> Hongo | E | | P |
| <i>A. pseudosychnopyramis</i> Y. Y. Cui et al. | | | P |
| <i>A. pseudovaginata</i> Hongo | | | P |
| <i>A. rimosa</i> P. Zhang & Zhu L. Yang | | | P |
| <i>A. rubrovolvata</i> S. Imai | | | P |
| <i>A. rufoferruginea</i> Hongo | | | P |
| <i>A. sepiacea</i> S. Imai | | | P |
| <i>A. siamensis</i> Sanmee et al. | | | P |
| <i>A. sinensis</i> Zhu L. Yang | E | | |
| <i>A. sphaerobulbosa</i> Hongo | | | P |
| <i>A. subfrostiana</i> Zhu L. Yang | | | P |
| <i>A. subfuliginea</i> Q. Cai et al. | | | P |
| <i>A. subglobosa</i> Zhu L. Yang | | | P |
| <i>A. subhemibapha</i> Zhu L. Yang et al. | E | | |
| <i>A. subjunquillea</i> S. Imai | | | P |
| <i>A. subpallidrosea</i> Hai J. Li | | | P |
| <i>A. subparvipantherina</i> Zhu L. Yang et al. | | | P |
| <i>A. sychnopyramis</i> Corner & Bas | | | P |
| <i>A. sychnopyramis</i> f. <i>subannulata</i> Hongo | | | P |
| <i>A. tomentosivolva</i> Zhu L. Yang | | | P |
| <i>A. vaginata</i> (Bull.) Lam. | E | Antimicrobial, antioxidant (Paloi and Acharya 2013; Giri et al. 2012; Liu et al. 2017f) | P |
| <i>A. verrucosivolva</i> Zhu L. Yang | | | P |
| <i>A. virgineoides</i> Bas | | | P |
| <i>A. virosa</i> Bertill. | | Antimicrobial (Antonyuk et al. 2010) | P |
| <i>A. yuaniana</i> Zhu L. Yang | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>Amauroderma</i> cf. <i>rude</i> (Berk.) Torrend | | Anti-inflammation, eliminating blood stasis (Dai et al. 2009); anticancer, antioxidant, antitumor, immunomodulation (Jiao et al. 2013; Zhang et al. 2018c) | |
| <i>A. rugosum</i> (Blume & T. Nees) Torrend | | Anti-inflammation, inducing diuresis, improving the stomach function, antitumor (Dai et al. 2009; Chan et al. 2013, 2015; Zhang et al. 2018c); antimicrobial, antioxidant, immunomodulation (Chan et al. 2013; Liew et al. 2015; Xiao et al. 2017b; Zhang et al. 2018c) | |
| <i>Ampulloclitocybe clavipes</i> (Pers.) Redhead et al. | E | Antitumor (Dai et al. 2009) | P |
| <i>Amyloporia xantha</i> (Fr.) Bondartsev & Singer | | Antibacteria, antitumor (Dai et al. 2009) | |
| <i>Antrodia subserpens</i> B.K. Cui & Yuan Y. Chen | | Antitumor (Chen and Cui 2015) | |
| <i>A. tanakae</i> (Murrill) Spirin & Miettinen | | Antitumor (Dai et al. 2009) | |
| <i>Armillaria borealis</i> Marxm. & Korhonen | E | Tranquilizing, improving immunity, treating neurasthenia, insomnia and limb numbness (Dai et al. 2009) | |
| <i>A. gallica</i> Marxm. & Romagn. | E | Treating neurasthenia, insomnia and limb numbness (Dai et al. 2009); antimicrobial (Engels et al. 2011) | |
| <i>A. mellea</i> (Vahl) P. Kumm. | E | Improving immunity, treating insomnia, antitumor (Dai et al. 2009; Wang and Feng 2009); anticancer, antiedema, antimicrobial, antioxidant, anti-inflammation, anti-neuroinflammation (Lung and Chang 2011; Giri et al. 2012; Wu et al. 2012a; Lai and Ng 2013; Cheng et al. 2017b; Ren et al. 2018b) | |
| <i>A. ostoyae</i> (Romagn.) Herink | E | Tranquilizing, improving immunity, treating neurasthenia, insomnia and limb numbness (Dai et al. 2009) | |
| <i>A. sinapina</i> Bérubé & Dessur. | E | Tranquilizing, improving immunity, treating neurasthenia, insomnia and limb numbness (Dai et al. 2009) | |
| <i>Arrhenia epichysium</i> (Pers.) Redhead et al. | E | | |
| <i>Artomyces pyxidatus</i> (Pers.) Jülich | E | | |
| <i>Astraeus hygrometricus</i> (Pers.) Morgan | | Haemostasis, treating chilblain (Dai et al. 2009); antifungus, antioxidant, antitumor, anti-inflammation, hepatoprotection (Biswas et al. 2010, 2011; Mallick et al. 2010; Lai et al. 2012) | |
| <i>Aureoboletus russellii</i> (Frost) G. Wu & Zhu L. Yang | | | P |
| <i>A. thibetanus</i> (Pat.) Hongo & Nagas. | E | | |
| <i>Auricularia americana</i> Parmasto & I. Parmasto ex Audet et al. | E | | |
| <i>A. cornea</i> Ehrenb. | E | Promoting blood circulation, treating hemorrhoids, anesic, antitumor (Dai et al. 2009; Song and Du 2010; Cao et al. 2017); antibacteria, antihypercholesterolemic activity, antioxidant, immunoenhancement (Sun et al. 2010b, c; Ren et al. 2014; Zhao et al. 2015b; Cao et al. 2017) | |
| <i>A. delicata</i> (Mont. ex Fr.) Henn. | E | Replenishing the blood, moistening the lung, haemostasis (Dai et al. 2009) | |
| <i>A. eburnea</i> L.J. Li & B. Liu | E | | |
| <i>A. fibrillifera</i> Kobayasi | E | | |
| <i>A. hainanensis</i> L.J. Li | E | | |
| <i>A. heimuer</i> F. Wu et al. | E | Antiulcer, replenishing the blood, moistening the lung, haemostasis, lowering blood glucose (Dai et al. 2009); antioxidant, hepatoprotection, immunomodulation (Zhang et al. 2011b; Bai et al. 2014; Gan et al. 2018; Liu et al. 2018a) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>A. minutissima</i> Y.C. Dai et al. | E | | |
| <i>A. moelleri</i> Lloyd | E | | |
| <i>A. orientalis</i> Y.C. Dai & F. Wu | E | | |
| <i>A. tibetica</i> Y.C. Dai & F. Wu | E | | |
| <i>A. villosula</i> Malysheva | E | | |
| <i>A. xishaensis</i> L.J. Li | E | | |
| <i>Austroboletus gracilis</i> (Peck) Wolfe | E | | |
| <i>Bankera fuligineoalba</i> (J.C. Schmidt) Coker & Beers ex Pouzar | E | Anti-inflammation, antitumor (Dai et al. 2009) | |
| <i>Baorangia pseudocalopus</i> (Hongo) G. Wu & Zhu L. Yang | E | | P |
| <i>Battarreia phalloides</i> (Dicks.) Pers. | | Detumescence, haemostasis, clearing the lung, relieving sore throat, detoxification (Dai et al. 2009) | |
| <i>B. stevenii</i> (Libosch.) Fr. | | Detumescence, haemostasis, clearing the lung, relieving sore throat, detoxification (Dai et al. 2009) | |
| <i>Beauveria scarabaeidicola</i> (Kobayasi) S.A. Rehner & Kepler | | Anti-inflammation (Kim et al. 2013) | |
| <i>Bjerkandera adusta</i> (Willd.) P. Karst. | | Antitumor (Dai et al. 2009) | |
| <i>B. fumosa</i> (Pers.) P. Karst. | | Antitumor (Dai et al. 2009); antioxidant, immunomodulation (Liu et al. 2017c) | |
| <i>Bolbitius demangei</i> (Quél.) Sacc. & D. Sacc. | | | P |
| <i>B. titubans</i> (Bull.) Fr. | | | P |
| <i>B. yunnanensis</i> W.F. Chiu | | | P |
| <i>Boletellus ananas</i> (M.A. Curtis) Murrill | | | P |
| <i>B. ananiceps</i> (Berk.) Singer | | | P |
| <i>B. chrysenteroides</i> (Snell) Snell | E | | |
| <i>B. emodensis</i> (Berk.) Singer | E | | |
| <i>B. mirabilis</i> (Murrill) Singer | E | | |
| <i>B. projectellus</i> (Murrill) Singer | E | | |
| <i>B. puniceus</i> (W.F. Chiu) X.H. Wang & P.G. Liu | E | | |
| <i>Boletinus cavipes</i> (Klotzsch) Kalchbr. | | Treating lumbago and skelalgia, and deadlimb (Dai et al. 2009) | |
| <i>B. punctatipes</i> Snell & E.A. Dick | | | P |
| <i>Boletopsis grisea</i> (Peck) Bondartsev & Singer | E | | |
| <i>B. leucomelaena</i> (Pers.) Fayod | E | Treating asthma, rheumatism and psoriasis (Dai et al. 2009) | |
| <i>Boletus auripes</i> Peck | E | Antioxidant (Li et al. 2017c) | |
| <i>B. bainiugan</i> Dentinger | E | Invigorating spleen and resolving food stagnation, invigorating kidney (Dai et al. 2009) | |
| <i>B. botryoides</i> B. Feng et al. | E | | |
| <i>B. citrifragrans</i> W.F. Chiu & M. Zang | E | | |
| <i>B. edulis</i> Bull. | E | | |
| <i>B. fagacicola</i> B. Feng et al. | E | | |
| <i>B. griseiceps</i> B. Feng et al. | E | | |
| <i>B. monilifer</i> B. Feng et al. | E | | |
| <i>B. orientialbus</i> N.K. Zeng & Zhu L. Yang | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>B. reticuloceps</i> (M. Zang et al.) Q.B. Wang & Y.J. Yao | E | | |
| <i>B. shiyong</i> Dentinger | E | | |
| <i>B. sinoedulis</i> B. Feng et al. | E | Treating lumbago and skelalgia, and deadlimb, antitumor (Dai et al. 2009) | |
| <i>B. squamulistipes</i> M. Zang | E | | |
| <i>B. subviolaceofuscus</i> B. Feng et al. | E | | |
| <i>B. tylophilopsis</i> B. Feng et al. | E | | |
| <i>B. umbrinipileus</i> B. Feng et al. | E | | |
| <i>B. violaceofuscus</i> W.F. Chiu | E | Antitumor (Dai et al. 2009) | |
| <i>B. viscidiceps</i> B. Feng et al. | E | | |
| <i>Bondarzewia dickinsii</i> (Berk.) Jia J. Chen et al. | E | Detoxification (Dai et al. 2009) | |
| <i>B. submesenterica</i> Jia J. Chen et al. | E | Detoxification (Dai et al. 2009) | |
| <i>B. tibetica</i> B.K. Cui et al. | E | | |
| <i>Bovista aestivalis</i> (Bonord.) Demoulin | E | | |
| <i>B. nigrescens</i> Pers. | | Haemostasis (Dai et al. 2009); antimicrobial (Altuner et al. 2012) | |
| <i>B. plumbea</i> Pers. | E | Haemostasis, detumescence, detoxification (Dai et al. 2009) | |
| <i>B. polymorpha</i> Kreisel | E | | |
| <i>B. promontorii</i> Kreisel | E | | |
| <i>B. pusilla</i> (Batsch) Pers. | E | Detumescence, haemostasis, detoxification, clearing the lung, relieving sore throat (Dai et al. 2009) | |
| <i>Bovistella longipedicellata</i> Teng | E | | |
| <i>B. radicata</i> Pat. | | Haemostasis, detumescence (Dai et al. 2009); antimicrobial, antitumor (Ye et al. 2017b; Zeng et al. 2018a) | |
| <i>B. sinensis</i> Lloyd | | Haemostasis, detumescence, disinfecting, clearing the lung (Dai et al. 2009) | |
| <i>Bulgaria inquinans</i> (Pers.) Fr. | E | Reducing blood viscosity, antitumor (Dai et al. 2009); anticancer, antimicrobial, antioxidant, anti-malarial, eliminating blood stasis, immunomodulation, relieving itching (Bi et al. 2011, 2013a, b; Feng et al. 2013a; Wang et al. 2016c) | P |
| <i>Butyriboletus appendiculatus</i> (Schaeff.) D. Arora & J.L. Frank | | Treating lumbago and skelalgia, and limb numbness (Dai et al. 2009); antimicrobial, antioxidant, antiradical activity (Dimitrijevic et al. 2015) | |
| <i>Butyriboletus pseudospeciosus</i> Kuan Zhao & Zhu L. Yang | E | | |
| <i>B. roseoflavus</i> (M. Zang & H.B. Li) D. Arora & J.L. Frank | E | Promoting digestion, antitumor (Dai et al. 2009) | P |
| <i>B. sanicibus</i> D. Aroa & J.L. Frank | E | | |
| <i>B. subsplendidus</i> (W.F. Chiu) Kuan Zhao et al. | E | Antioxidant (Liu et al. 2013a) | |
| <i>B. yicibus</i> D. Arora & J.L. Frank | E | | |
| <i>Calcipostia guttulata</i> (Sacc.) B.K. Cui et al. | | Antitumor (Dai et al. 2009) | |
| <i>Caloboletus panniformis</i> (Taneyama & Har. Takah.) Vizzini | | | P |
| <i>C. taienus</i> (W.F. Chiu) Ming Zhang & T.H. Li | E | | |
| <i>C. yunnanensis</i> Kuan Zhao & Zhu L. Yang | | | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>Calocera viscosa</i> (Pers.) Fr. | | Antioxidant (Muszyńska et al. 2012) | P |
| <i>Calocybe carnea</i> (Bull.) Donk | E | | |
| <i>C. constricta</i> (Fr.) Kühner ex Singer | E | | |
| <i>C. gambosa</i> (Fr.) Singer | E | Invigorating qi, thermolysis (Dai et al. 2009); antifungus, antitumor, immunomodulation (Angelini et al. 2012; Villares 2013) | |
| <i>C. gangraenosa</i> (Fr.) V. Hofst. et al. | E | | P |
| <i>C. ionides</i> (Bull.) Donk | E | | |
| <i>Calostoma japonicum</i> Henn. | | Antitumor (Dai et al. 2009) | |
| <i>Calvatia boninensis</i> S. Ito & S. Imai | E | | |
| <i>C. candida</i> (Rostk.) Hollós | E | Relieving fever, haemostasis (Dai et al. 2009); antioxidant (Wu and Zhu 2016) | |
| <i>C. craniiformis</i> (Schwein.) Fr. ex De Toni | E | Anti-inflammatory, detumescence, analgesic (Dai et al. 2009); antifungus (Jameel and Al-Ezzy 2017) | |
| <i>C. cyathiformis</i> (Bosc) Morgan | E | Detumescence, haemostasis, detoxification (Dai et al. 2009) | |
| <i>C. gigantea</i> (Batsch) Lloyd | E | Detumescence, analgesic, clearing the lung, detoxification, treating dermatomycosis, antitumor (Dai et al. 2009; Xu and Xu 2011); analgesic, antibacteria, antioxidant, anti-inflammation, hepatoprotection (You and Bao 2011; Li et al. 2015h; Xiang et al. 2016) | |
| <i>C. lilacina</i> (Mont. & Berk.) Henn. | E | Haemostasis, detumescence, detoxification (Dai et al. 2009); anticancer (Wu et al. 2011a) | |
| <i>C. tatrensis</i> Hollós | | Haemostasis, anti-inflammatory (Dai et al. 2009) | |
| <i>Cantharellula umbonata</i> (J.F. Gmel.) Singer | E | Antitumor (Dai et al. 2009) | P |
| <i>Cantharellus cerinoalbus</i> Eyssart. & Walley | E | | |
| <i>C. cibarius</i> Fr. | E | Improving eyesight, promoting digestion, treating the respiratory and gastrointestinal tract infection, antitumor (Dai et al. 2009); antimicrobial, antioxidant, antihyperlipidemic activity, anti-inflammation, neuroprotective (Ebrahimzadeh et al. 2010; Aina et al. 2012; Vamanu and Nita 2014; Guo 2015; Lemieszek et al. 2018; Zhang 2018) | |
| <i>C. cinereus</i> (Pers.) Fr. | E | | |
| <i>C. cinnabarinus</i> (Schwein.) Schwein. | E | | |
| <i>C. ferruginascens</i> P.D. Orton | E | | |
| <i>C. lateritius</i> (Berk.) Singer | E | | |
| <i>C. minor</i> Peck | E | Improving eyesight, improving the lung, invigorating the stomach (Dai et al. 2009) | |
| <i>C. pallidus</i> Yasuda | E | | |
| <i>C. phloginus</i> S.C. Shao & P.G. Liu | E | | |
| <i>C. subalbidus</i> A.H. Sm. & Morse | E | | |
| <i>C. tubaeformis</i> Fr. | | Antibacteria (Dai et al. 2009); antioxidant (Rodríguez-Seoane et al. 2018) | |
| <i>C. vaginatus</i> S.C. Shao et al. | E | | |
| <i>C. xanthopus</i> (Pers.) Duby | E | | |
| <i>C. yunnanensis</i> W.F. Chiu | E | | |
| <i>C. zangii</i> X.F. Tian et al. | E | | |
| <i>Castanoporus castaneus</i> (Lloyd) Ryvarden | | Antitumor (Dai et al. 2009) | |
| <i>Catathelasma imperiale</i> (P. Karst.) Singer | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>C. ventricosum</i> (Peck) Singer | E | Antibacteria, antioxidant, anticoagulant activity, antihyperglycemic, antihyperlipidemic and antidiabetic activities (Liu et al. 2013d, e, 2015b, 2017i, 2018n, o) | |
| <i>Cerrena unicolor</i> (Bull.) Murrill | | Treating chronic bronchitis, antitumor (Dai et al. 2009); anticancer, antimicrobial, antiviral, antioxidant, immunomodulation (Jaszek et al. 2013; Mizerska-Dudka et al. 2015) | |
| <i>C. zonata</i> (Berk.) H.S. Yuan | | Antibacteria, antitumor (Dai et al. 2009) | |
| <i>Chiua virens</i> (W.F. Chiu) Y.C. Li & Zhu L. Yang | E | | P |
| <i>Chlorophyllum agaricoides</i> (Czern.) Vellinga | E | Detumescence, haemostasis, clearing the lung, relieving sore throat, detoxification (Dai et al. 2009) | |
| <i>C. globosum</i> (Mossebo) Vellinga | | | P |
| <i>C. hortense</i> (Murrill) Vellinga | | | P |
| <i>C. molybdites</i> (G. Mey.) Masee | | | P |
| <i>C. neomastoideum</i> (Hongo) Vellinga | | | P |
| <i>Chroogomphus confusus</i> Y.C. Li & Zhu L. Yang | E | | |
| <i>C. filiformis</i> Y.C. Li & Zhu L. Yang | E | | |
| <i>C. orientirutilus</i> Y.C. Li & Zhu L. Yang | E | | |
| <i>C. pseudotomentosus</i> O.K. Mill. & Aime | E | | |
| <i>C. purpurascens</i> (Lj.N. Vassiljeva) M.M. Nazarova | E | | |
| <i>C. roseolus</i> Y.C. Li & Zhu L. Yang | E | | |
| <i>C. rutilus</i> (Schaeff.) O.K. Mill. | E | Treating neurodermatitis (Dai et al. 2009); antioxidant, antitumor, hypoglycemic and hypolipidemic activities, prevention and treatment of Parkinson's disease (Kalyoncu et al. 2010; Zhang et al. 2013b; Zhang et al. 2017b) | |
| <i>Cibaomyces glutinis</i> Zhu L. Yang et al. | E | | |
| <i>Clathrus archeri</i> (Berk.) Dring | | | P |
| <i>C. ruber</i> P. Micheli ex Pers. | | | P |
| <i>Clavaria fragilis</i> Holmsk. | E | | |
| <i>C. zollingeri</i> Lév. | E | Antitumor (Dai et al. 2009) | |
| <i>Clavariadelphus himalayensis</i> Methven | E | | |
| <i>C. ligula</i> (Schaeff.) Donk | E | | |
| <i>C. pallidoincarnatus</i> Methven | E | | |
| <i>C. pistillaris</i> (L.) Donk | E | | P |
| <i>C. sachalinensis</i> (S. Imai) Corner | E | | |
| <i>C. truncatus</i> Donk | E | Antibacteria (Yamaç and Bilgili 2006) | |
| <i>C. yunnanensis</i> Methven | E | | |
| <i>Claviceps purpurea</i> (Fr.) Tul. | | Treating postpartum hemorrhage and migraine (Dai et al. 2009) | P |
| <i>Clavulina cinerea</i> (Bull.) J. Schröt. | E | | |
| <i>C. coralloides</i> (L.) J. Schröt. | E | | |
| <i>C. rugosa</i> (Bull.) J. Schröt. | E | | |
| <i>Clavulinopsis amoena</i> (Zoll. & Moritzi) Corner | E | | |
| <i>C. corniculata</i> (Schaeff.) Corner | E | | |
| <i>C. fusiformis</i> (Sowerby) Corner | E | | |
| <i>C. helvola</i> (Pers.) Corner | E | | |
| <i>C. miyabeana</i> (S. Ito) S. Ito | E | | |
| <i>C. sulcata</i> Overeem | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>Climacodon septentrionalis</i> (Fr.) P. Karst. | E | Antioxidant (Jia et al. 2015) | |
| <i>Clitocybe bresadolana</i> Singer | | | P |
| <i>C. candida</i> Bres. | E | Antibacteria (Dai et al. 2009) | |
| <i>C. catinus</i> (Fr.) Quél. | E | | |
| <i>C. dealbata</i> (Sowerby) P. Kumm. | | | P |
| <i>C. eucalyptorum</i> Cleland | | Antifungus (Dai et al. 2009) | |
| <i>C. fragrans</i> (With.) P. Kumm. | E | Antitumor (Dai et al. 2009) | P |
| <i>C. geotropa</i> (Bull.) Quél. | | Antitumor (Dai et al. 2009); antioxidant (Sarikurkcu et al. 2010) | |
| <i>C. gibba</i> (Pers.) P. Kumm. | E | | P |
| <i>C. griseifolia</i> Murrill | E | | |
| <i>C. hydropogon</i> (Bull.) P. Kumm. | | Antibiotics (Dai et al. 2009) | |
| <i>C. infundibuliformis</i> (Schaeff.) Quél. | E | Antitumor (Dai et al. 2009) | |
| <i>C. inornata</i> (Sowerby) Gillet | E | | |
| <i>C. maxima</i> (P. Gaertn., G. Mey. & Scherb.) P. Kumm. | E | Antioxidant (Tsai et al. 2009; Guo and Hu 2013) | |
| <i>C. nebularis</i> (Batsch) P. Kumm. | E | Antibacteria, antitumor (Dai et al. 2009); antiproliferation (Pohleven et al. 2009) | |
| <i>C. obsoleta</i> (Batsch) Quél. | | | P |
| <i>C. odora</i> (Bull.) P. Kumm. | E | Antitumor (Dai et al. 2009); antifungus, antioxidant (Egwin et al. 2011; Türkoğlu et al. 2011) | |
| <i>C. ornamentalis</i> Velen. | | | P |
| <i>C. phyllophila</i> (Pers.) P. Kumm. | | | P |
| <i>C. rivulosa</i> (Pers.) P. Kumm. | | | P |
| <i>C. robusta</i> Peck | E | | |
| <i>C. sinopica</i> (Fr.) P. Kumm. | E | Antibacteria (Zheng et al. 2010) | |
| <i>C. sudorifica</i> (Peck) Peck | | | P |
| <i>C. truncicola</i> (Peck) Sacc. | E | | |
| <i>C. vermicularis</i> (Fr.) Quél. | E | | |
| <i>C. wutaishanensis</i> B. Liu et al. | E | | |
| <i>Clitopilus prunulus</i> (Scop.) P. Kumm. | E | | |
| <i>Collybia iocephala</i> (Berk. & M.A. Curtis) Singer | E | | |
| <i>C. maculata</i> (Alb. & Schwein.) P. Kumm. | | Antifungus, antiviral (Dai et al. 2009) | |
| <i>Conocybe apala</i> (Fr.) Arnolds | | | P |
| <i>C. cylindrospora</i> T. Bau & J. L. | | | P |
| <i>C. serrata</i> T. Bau & J. Liu | | | P |
| <i>C. tenera</i> (Schaeff.) Fayod | | | P |
| <i>Coprinellus disseminatus</i> (Pers.) J.E. Lange | | | P |
| <i>C. domesticus</i> (Bolton) Vilgalys et al. | | | P |
| <i>C. micaceus</i> (Bull.) Vilgalys et al. | | Antitumor (Dai et al. 2009); antimicrobial, antioxidant, antidiabetic activity, anti-acetylcholinesterase, anti-inflammation, anti-tyrosinase, α -glucosidase inhibitory (Ayodele and Idoko 2011; Nguyen et al. 2014) | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>C. pseudodisseminatus</i> T. Bau & M. Huang | | | P |
| <i>C. radians</i> (Fr.) Vilgalys et al. | | Antitumor (Dai et al. 2009) | |
| <i>Coprinopsis atramentaria</i> (Bull.) Redhead et al. | E | Promoting digestion, eliminating phlegm, detoxification, detumescence, antitumor (Dai et al. 2009); antibacteria, antifungus (Heleno et al. 2014) | P |
| <i>C. cinerea</i> (Schaeff.) Redhead et al. | | Antitumor (Dai et al. 2009) | |
| <i>C. friesii</i> (Quél.) P. Karst. | | Antitumor (Dai et al. 2009) | |
| <i>C. insignis</i> (Peck) Redhead et al. | | Antitumor (Dai et al. 2009) | P |
| <i>C. lagopus</i> (Fr.) Redhead et al. | | Antitumor (Dai et al. 2009) | |
| <i>C. picacea</i> (Bull.) Redhead et al. | | | P |
| <i>Coprinus comatus</i> (O.F. Müll.) Pers. | E | Promoting digestion, treating hemorrhoids and diabetes, antitumor, antifungus (Dai et al. 2009; Liu et al. 2016c); antioxidant, antiproliferation, HIV-1 reverse transcriptase inhibitor, antidiabetic activities (Li et al. 2010; Popović et al. 2010; Zhao et al. 2014b; Hu et al. 2018b) | P |
| <i>C. fuscescens</i> (Schaeff.) Fr. | E | | |
| <i>C. sterquilinus</i> (Fr.) Fr. | | Promoting digestion, eliminating phlegm, detoxification, detumescence, antitumor (Dai et al. 2009) | |
| <i>Cordierites frondosus</i> (Kobayasi) Korf | | | P |
| <i>Cordyceps bassiana</i> Z.Z. Li et al. | | Anti-inflammation (Suh et al. 2017) | |
| <i>C. brasiliensis</i> Henn. | | Improving immunity (Dai et al. 2009) | |
| <i>C. cicadae</i> (Miq.) Masseur | | Antimicrobial, antioxidant, antitumor, improving immunity (Wang et al. 2014c, 2017c; Hu et al. 2017a; Zhang et al. 2017f; Hou et al. 2018; Song et al. 2018c) | |
| <i>C. cicadicola</i> Teng | E | | |
| <i>C. crassispora</i> M. Zang et al. | | Tranquilizing (Dai et al. 2009) | |
| <i>C. forquignonii</i> Quél. | | Reinforcing insufficiency, improving the lung and invigorating kidney, treating hepatitis (Dai et al. 2009) | |
| <i>C. gracilis</i> (Grev.) Durieu & Mont. | | Tranquilizing, invigorating kidney, treating pulmonary diseases, antitumor (Dai et al. 2009) | |
| <i>C. guangdongensis</i> T.H. Li et al. | E | Antivirus, anti-fatigue, anti-inflammation (Yan et al. 2010, 2013b, 2014) | |
| <i>C. hawkesii</i> G.R. Gray | E | invigorating kidney, hemostasis and resolving phlegm (Dai et al. 2009); antioxidant (Zhang et al. 2014c) | |
| <i>C. kyushuensis</i> A. Kawam. | | Invigorating kidney and moistening the lung (Dai et al. 2009); antioxidant (Dong et al. 2011) | |
| <i>C. martialis</i> Speg. | | Invigorating kidney and lung (Dai et al. 2009) | |
| <i>C. memorabilis</i> (Ces.) Ces. | | Inhibiting the coagulation of platelet (Dai et al. 2009) | |
| <i>C. militaris</i> (L.) Fr. | E | Hemostasis and resolving phlegm, antitumor, antibacteria, invigorating kidney, treating bronchitis (Dai et al. 2009; Park et al. 2009; Lee et al. 2015); alleviation of non-alcoholic fatty liver, antifungus, antioxidant, anti-fatigue, anti-inflammation, hepatoprotection, hypnotic activity, improving immunity, protection of alcohol-induced acute liver injury (Park et al. 2009; Jo et al. 2010; Wang et al. 2012a; Choi et al. 2014a; Hou et al. 2014; Jiang et al. 2014a; Park et al. 2014; Chen et al. 2015b; Shao et al. 2015; Huang et al. 2017b; Zhong et al. 2017; Liu et al. 2018j) | |
| <i>C. ningxiaensis</i> T. Bau & J.Q. Yan | E | | |
| <i>C. polyarthra</i> Möller | | Reinforcing insufficiency, invigorating the lung and kidney (Dai et al. 2009) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>C. pruinosa</i> Petch | | Treating cardiovascular diseases (Dai et al. 2009); antioxidant, anti-inflammation (Cui 2009; Kim et al. 2014; Oh et al. 2014) | |
| <i>C. shanxiensis</i> B. Liu et al. | E | | |
| <i>C. taii</i> Z.Q. Liang & A.Y. Liu | | Antitumor (Dai et al. 2009; Liu et al. 2015a, 2017a); antibacteria, antioxidant, improving immunity (Xiao et al. 2012, 2017a) | |
| <i>C. takaomontana</i> Yakush. & Kumaz. | | Antitumor, improving immunity (Dai et al. 2009; Liang et al. 2018); antibacteria, antidepression, anti-aging, lowering serum lipids, lowering blood glucose (Liang et al. 2018) | |
| <i>Cortinarius alboviolaceus</i> (Pers.) Fr. | E | | |
| <i>C. bolaris</i> (Pers.) Fr. | | | P |
| <i>C. bovinus</i> Fr. | E | Antitumor (Dai et al. 2009) | |
| <i>C. callochrous</i> (Pers.) Gray | E | | P |
| <i>C. caperatus</i> (Pers.) Fr. | E | Antitumor (Dai et al. 2009); antiviral (Gong et al. 2009) | |
| <i>C. castaneus</i> (Bull.) Fr. | | | P |
| <i>C. cinnamomeus</i> (L.) Gray | E | Antitumor (Dai et al. 2009) | P |
| <i>C. claricolor</i> (Fr.) Fr. | E | | |
| <i>C. collinitus</i> (Sowerby) Gray | E | Antitumor (Dai et al. 2009; Huang et al. 2018) | |
| <i>C. cotoneus</i> Fr. | E | | |
| <i>C. elegantior</i> (Fr.) Fr. | E | | |
| <i>C. emodensis</i> Berk. | E | | |
| <i>C. fuscobovinus</i> Kytöv. et al. | E | | |
| <i>C. gentilis</i> (Fr.) Fr. | | | P |
| <i>C. glutinosus</i> Peck | | Antitumor (Dai et al. 2009) | |
| <i>C. hemitrichus</i> (Pers.) Fr. | E | Antitumor (Dai et al. 2009) | P |
| <i>C. latus</i> (Pers.) Fr. | | Antitumor (Dai et al. 2009) | |
| <i>C. livido-ochraceus</i> (Berk.) Berk. | | Antitumor (Dai et al. 2009) | |
| <i>C. mucifluus</i> Fr. | | Antitumor (Dai et al. 2009) | |
| <i>C. multiformis</i> Fr. | E | | |
| <i>C. nigrosquamosus</i> Hongo | | | P |
| <i>C. orellanus</i> Fr. | | | P |
| <i>C. pholideus</i> (Lilj.) Fr. | E | Antitumor (Dai et al. 2009) | |
| <i>C. pseudosalor</i> J.E. Lange | | | P |
| <i>C. rubellus</i> Cooke | | | P |
| <i>C. salor</i> Fr. | E | Antitumor (Dai et al. 2009) | P |
| <i>C. sanguineus</i> (Wulfen) Gray | | Antitumor (Dai et al. 2009) | P |
| <i>C. tenuipes</i> (Hongo) Hongo | E | | |
| <i>C. torvus</i> (Fr.) Fr. | | Antitumor (Dai et al. 2009) | |
| <i>C. traganus</i> (Fr.) Fr. | | | P |
| <i>C. trivialis</i> J.E. Lange | E | | P |
| <i>C. turmalis</i> Fr. | E | Antitumor (Dai et al. 2009) | |
| <i>C. varius</i> (Schaeff.) Fr. | E | | |
| <i>C. vibratilis</i> (Fr.) Fr. | | Antitumor (Dai et al. 2009) | P |
| <i>C. violaceus</i> (L.) Gray | E | Antitumor (Dai et al. 2009); antioxidant (Reis et al. 2011b) | |
| <i>Craterellus aureus</i> Berk. & M.A. Curtis | E | Antibacteria (Feng et al. 2011) | |
| <i>C. cornucopioides</i> (L.) Pers. | E | Anticomplement, antitumor, anti-inflammation (Fan et al. 2014; O'Callaghan et al. 2015) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>C. lutescens</i> (Fr.) Fr. | E | | |
| <i>C. luteus</i> T.H. Li & X.R. Zhong | E | | |
| <i>C. odoratus</i> (Schwein.) Fr. | E | | |
| <i>C. tubaeformis</i> (Fr.) Quél. | E | | |
| <i>Crocinoletus rufoaureus</i> (Masse) N.K. Zeng et al. | E | | |
| <i>Cryptoporus sinensis</i> Sheng H. Wu & M. Zang | | Treating asthma and tracheitis, antibacteria and anti-inflammatory (Dai et al. 2009; Wu et al. 2011d); antioxidant, antitumor (Wu et al. 2011c, d) | |
| <i>C. volvatus</i> (Peck) Shear | | Treating asthma and tracheitis, antibacteria and anti-inflammatory (Dai et al. 2009); antioxidant (Zhou et al. 2018) | |
| <i>Cyanoboletus instabilis</i> (W.F. Chiu) G. Wu & Zhu L. Yang | E | | |
| <i>C. pulverulentus</i> (Opat.) Gelardi et al. | E | Antitumor (Dai et al. 2009) | P |
| <i>Cyathus africanus</i> H.J. Brodie | | Anticancer, anti-inflammation (Han et al. 2013) | |
| <i>C. helenae</i> H.J. Brodie | | Antibacteria, antifungus (Dai et al. 2009) | |
| <i>C. hookeri</i> Berk. | | Anti-inflammation (Xu et al. 2013) | |
| <i>C. stercoreus</i> (Schwein.) De Toni | | Treating gastropathy (Dai et al. 2009) | |
| <i>C. striatus</i> (Huds.) Willd. | | Antibacteria, treating gastropathy (Dai et al. 2009) | |
| <i>Cystoderma amianthinum</i> (Scop.) Fayod | E | | |
| <i>C. fallax</i> A.H. Sm. & Singer | E | | |
| <i>Cystodermella cinnabarina</i> (Alb. & Schwein.) Harmaja | E | | |
| <i>C. granulosa</i> (Batsch) Harmaja | E | | |
| <i>Dacrymyces palmatus</i> Bres. | | Antitumor (Dai et al. 2009) | |
| <i>Daedalea dickinsii</i> Yasuda | | Antitumor (Dai et al. 2009; Liu et al. 2018); antioxidant (Shen et al. 2013a; Mao et al. 2014) | |
| <i>Daedaleopsis tricolor</i> (Bull.) Bondartsev & Singer | | Antitumor (Dai et al. 2009); antioxidant (Ćilerdžić et al. 2017) | |
| <i>Daldinia concentrica</i> (Bolton) Ces. & De Not. | | Treating infantile convulsion (Dai et al. 2009); antioxidant (Mo et al. 2018) | P |
| <i>Deconica merdaria</i> (Fr.) Noordel. | | | P |
| <i>D. montana</i> (Pers.) P.D. Orton | | | P |
| <i>Desarmillaria tabescens</i> (Scop.) R.A. Koch & Aime | E | Treating hepatopathy, antitumor (Dai et al. 2009) | P |
| <i>Descoclea flavoannulata</i> (Lj.N. Vassiljeva) E. Horak | E | | |
| <i>Dictyophora duplicata</i> (Bosc) E. Fisch. | E | Treating dysentery, improving immunity, anti-aging, bacteriostasis (Dai et al. 2009) | |
| <i>D. echinvolvata</i> M. Zang et al. | E | Antimicrobial, antioxidant, antitumor (Tan et al. 2010; Jiang et al. 2011; Lin et al. 2013, 2018a; Han et al. 2014; Yan et al. 2016) | |
| <i>D. indusiata</i> (Vent.) Desv. | E | Treating dysentery, lowering cholesterol, antitumor (Dai et al. 2009; Deng et al. 2013); antimicrobial, antioxidant, immunomodulation (Oyetayo et al. 2009; Deng et al. 2012; Shang et al. 2016; Lan et al. 2017; Wang et al. 2018f) | |
| <i>D. merulina</i> Berk. | E | | |
| <i>D. multicolor</i> Berk. & Broome | E | Treating dermatophytosis, improving immunity, anti-aging, bacteriostasis (Dai et al. 2009) | P |
| <i>D. rubrovolvata</i> M. Zang et al. | E | Antiglycation, antitumor, antioxidant, anti-fatigue, anti-hypoxia, hepatoprotection (Ye et al. 2016a, b, 2017a; Sun et al. 2017) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|---|------------------------------|
| <i>Discina ancilis</i> (Pers.) Sacc. | | | P |
| <i>D. fastigiata</i> (Krombh.) Svrček & J. Moravec | | | P |
| <i>Disciotis venosa</i> (Pers.) Arnould | | | P |
| <i>Disciseda cervina</i> (Berk.) G. Cunn. | | Anti-inflammation, haemostasis (Dai et al. 2009) | |
| <i>Earliella scabrosa</i> (Pers.) Gilb. & Ryvarden | | Promoting blood circulation, relieving itching (Dai et al. 2009); antibacteria, antifungus, antioxidant (Peng and Don 2013; Cen et al. 2016; Lu et al. 2017) | |
| <i>Echinoderma asperum</i> (Pers.) Bon | | | P |
| <i>Elaphocordyceps ophioglossoides</i> (J.F. Gmel.) G.H. Sung et al. | E | Promoting blood circulation, regulating menstruation (Dai et al. 2009) | |
| <i>Endophallus yunnanensis</i> M. Zang & R.H. Petersen | E | | |
| <i>Engleromyces sinensis</i> M.A. Whalley et al. | | Anti-inflammation, antibacteria (Dai et al. 2009) | |
| <i>Entoloma abortivum</i> (Berk. & M.A. Curtis) Donk | E | Antitumor (Dai et al. 2009) | |
| <i>E. album</i> Hiroë | | | P |
| <i>E. chalybeum</i> (Pers.) Noordel. | | | P |
| <i>E. clypeatum</i> (L.) P. Kumm. | | Antitumor (Dai et al. 2009) | P |
| <i>E. incanum</i> (Fr.) Hesler | | | P |
| <i>E. murrayi</i> (Berk. & M.A. Curtis) Sacc. | | Antitumor (Dai et al. 2009) | P |
| <i>E. omiense</i> (Hongo) E. Horak | | | P |
| <i>E. opacum</i> Noordel. | E | | P |
| <i>E. quadratum</i> (Berk. & M.A. Curtis) E. Horak | | | P |
| <i>E. rhodopolium</i> (Fr.) P. Kumm. | | Antitumor (Dai et al. 2009) | P |
| <i>E. salmoneum</i> (Peck) Sacc. | | Antitumor (Dai et al. 2009) | P |
| <i>E. sarcopum</i> Nagas. & Hongo | E | | |
| <i>E. saundersii</i> (Fr.) Sacc. | E | | |
| <i>E. sinuatum</i> (Bull.) P. Kumm. | | Antitumor (Dai et al. 2009) | P |
| <i>E. turbidum</i> (Fr.) Quél. | E | | |
| <i>Exidia glandulosa</i> (Bull.) Fr. | E | | P |
| <i>Fistulina subhepatica</i> B.K. Cui & J. Song | E | Antitumor, treating gastrointestinal diseases (Dai et al. 2009) | |
| <i>Flammulina fennae</i> Bas | E | | |
| <i>F. filiformis</i> (Z.W. Ge et al.) P.M. Wang et al. | E | Lowering blood pressure, lowering cholesterol, antitumor (Dai et al. 2009; Wang et al. 2012c, e; Feng et al. 2016); antibacteria, antimicrobia, antioxidant (Wang et al. 2012d, e, f) | |
| <i>F. populicola</i> Redhead & R.H. Petersen | E | | |
| <i>F. rossica</i> Redhead & R.H. Petersen | E | Antitumor, immunomodulation (Zhu et al. 2015) | |
| <i>F. yunnanensis</i> Z.W. Ge & Zhu L. Yang | E | | |
| <i>Flavodon flavus</i> (Klotzsch) Ryvarden | | Antitumor (Dai et al. 2009); antioxidant (Fernando et al. 2016) | |
| <i>Flavoscypha cantharella</i> (Fr.) Harmaja | | | P |
| <i>Floccularia albolanaripes</i> (G.F. Atk.) Redhead | E | | |
| <i>F. luteovirens</i> (Alb. & Schwein.) Pouzar | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>Fomes fomentarius</i> (L.) Fr. | | Eliminating blood stasis, antitumor (Dai et al. 2009; Huang et al. 2012c; Kolundžić et al. 2016; Xie et al. 2018b); antibacteria, anti-infection, immunomodulation (Gao et al. 2009; Senyuk et al. 2011; Kolundžić et al. 2016; Xie et al. 2018b) | |
| <i>Fomitiporia alpina</i> B.K. Cui & Hong Chen | | Antitumor (Chen and Cui 2017) | |
| <i>F. bannaensis</i> Y.C. Dai | | Treating coronary artery diseases (Dai 2010) | |
| <i>F. erecta</i> (A. David et al.) Fiasson | | Antitumor (Dai 2010) | |
| <i>F. gaoligongensis</i> B.K. Cui & Hong Chen | | Antitumor (Chen and Cui 2017) | |
| <i>F. hainaniana</i> B.K. Cui & Hong Chen | | Treating coronary artery diseases (Chen and Cui 2017) | |
| <i>F. hartigii</i> (Allesch. & Schnabl) Fiasson & Niemelä | | Antitumor (Dai et al. 2009); antioxidant (Kovács et al. 2017) | |
| <i>F. norbulingka</i> B.K. Cui & Hong Chen | | Antitumor (Chen et al. 2016b) | |
| <i>F. pentaphylacis</i> L.W. Zhou | | Antitumor (Zhou and Xue 2012) | |
| <i>F. pseudopunctata</i> (A. David et al.) Fiasson | | Treating coronary artery diseases (Dai 2010) | |
| <i>F. punctata</i> (P. Karst.) Murrill | | Treating coronary artery diseases (Dai et al. 2009); antioxidant, antitumor, antiviral (Yuan et al. 2011; Liu et al. 2017d) | |
| <i>F. punicata</i> Y.C. Dai et al. | | Antitumor (Dai 2010) | |
| <i>F. rhamnoides</i> T.Z. Liu & F. Wu | | Antitumor (Liu et al. 2018f) | |
| <i>F. robusta</i> (P. Karst.) Fiasson & Niemelä | | Antitumor (Dai et al. 2009); antibacteria, antioxidant (Kovács et al. 2017) | |
| <i>F. subhippophaëicola</i> B.K. Cui & H. Chen | | Antitumor (Chen et al. 2016b) | |
| <i>F. subrobusta</i> B.K. Cui & Hong Chen | | Antitumor (Chen and Cui 2017) | |
| <i>F. subtropica</i> B.K. Cui & Hong Chen | | Treating coronary artery diseases (Chen and Cui 2017) | |
| <i>F. tenuitubus</i> L.W. Zhou | | Antitumor (Zhou and Xue 2012) | |
| <i>F. texana</i> (Murrill) Nuss | | Antitumor (Dai 2010) | |
| <i>F. torreyae</i> Y.C. Dai & B.K. Cui | | Treating coronary artery diseases (Dai 2010) | |
| <i>Fomitopsis betulina</i> (Bull.) B.K. Cui et al. | | Antibacteria, antitumor (Dai et al. 2009); antioxidant (Zhao et al. 2014a) | |
| <i>F. pinicola</i> (Sw.) P. Karst. | | Dispelling wind-evil, eliminating dampness, antitumor (Dai et al. 2009; Sun et al. 2012b, 2016); antifungus, antioxidant, immunomodulation, neuroprotective activities (Guler et al. 2009; Bao et al. 2015; Sun et al. 2016; Guo and Wolf 2018) | |
| <i>Fulvifomes fastuosus</i> (Lév.) Bondartseva & S. Herrera | | Antibiotics (Dai et al. 2009) | |
| <i>F. mcgregorii</i> (Bres.) Y.C. Dai | | Antitumor, improving immunity (Dai et al. 2009) | |
| <i>F. rimosus</i> (Berk.) Fiasson & Niemelä | | Invigorating qi, replenishing the blood, improving immunity, antitumor (Dai et al. 2009); antioxidant (Kovács et al. 2017) | |
| <i>Funalia trogii</i> (Berk.) Bondartsev & Singer | | Anticancer, antioxidant, antitumor (Mazmançı et al. 2011; Rashid et al. 2011; Gao et al. 2017) | |
| <i>Fuscoboletinus spectabilis</i> (Peck) Pomerl. & A.H. Sm. | | | P |
| <i>Fuscoporia gilva</i> (Schwein.) T. Wagner & M. Fisch. | | Reinforcing the spleen, eliminating dampness, promoting digestion, antitumor, improving immunity (Dai et al. 2009) | |
| <i>F. torulosa</i> (Pers.) T. Wagner & M. Fisch. | | Detoxification, treating anemia (Dai et al. 2009); antibacteria, antioxidant (Kovács et al. 2017) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>Galerina fasciculata</i> Hongo | | | P |
| <i>G. filiformis</i> A.H. Sm. & Singer | | | P |
| <i>G. helvoliceps</i> (Berk. & M.A. Curtis) Singer | | | P |
| <i>G. heterocystis</i> (G.F. Atk.) A.H. Sm. & Singer | | | P |
| <i>G. hypnorum</i> (Schrank) Kühner | | | P |
| <i>G. marginata</i> (Batsch) Kühner | | | P |
| <i>G. megalocystis</i> A.H. Sm. & Singer | | | P |
| <i>G. oregonensis</i> A.H. Sm. | | | P |
| <i>G. perplexa</i> A.H. Sm. | | | P |
| <i>G. pistilllicystis</i> (G.F. Atk.) A.H. Sm. & Singer | | | P |
| <i>G. subpectinata</i> (Murrill) A.H. Sm. & Singer | | | P |
| <i>G. sulciceps</i> (Berk.) Boedijn | | | P |
| <i>G. venenata</i> A.H. Sm. | | | P |
| <i>G. vittiformis</i> (Fr.) Singer | | | P |
| <i>Ganoderma angustisporum</i> J.H. Xing et al. | | Antitumor (Xing et al. 2018) | |
| <i>G. applanatum</i> (Pers.) Pat. | | Antitumor, antiviral, lowering blood glucose, improving immunity (Dai et al. 2009; Osińska-Jaroszuk et al. 2014); antibacteria, antimicrobial, antioxidant (Kozarski et al. 2012; Li et al. 2013a; Osińska-Jaroszuk et al. 2014; Mohanta et al. 2016) | |
| <i>G. australe</i> (Fr.) Pat. | | Antitumor (Dai et al. 2009); immunomodulation (Wang et al. 2016e) | |
| <i>G. boninense</i> Pat. | | Antitumor (Dai et al. 2009); antiplasmodial activity (Ma et al. 2014d) | |
| <i>G. capense</i> (Lloyd) Teng | | Relieving cough (Dai et al. 2009); antioxidant, anti-glycated and antiradical activities (Yan et al. 2013a; Huang et al. 2015) | |
| <i>G. casuarinicola</i> J.H. Xing et al. | | Antitumor (Xing et al. 2018) | |
| <i>G. formosanum</i> T.T. Chang & T. Chen | | Invigorating liver (Dai et al. 2009); antitumor (Wang et al. 2014a) | |
| <i>G. leucocontextum</i> T.H. Li et al. | | Anticancer, antihyperlipidemic and antidiabetic activities, anti-obesity (Wang et al. 2015b, 2017d; Chen et al. 2016c; Zhao et al. 2016c, d; Zhang et al. 2017a, 2018a) | |
| <i>G. lingzhi</i> Sheng H. Wu et al. | | Anticancer, antihypertension, antioxidant, antidiabetic activity, hepatoprotection, immunomodulation, stimulating neural stem cell proliferation, treatment of nephropathy (Fatmawati et al. 2013; Tran et al. 2014; Yan et al. 2015a, b; Amen et al. 2016, 2017; Wu et al. 2016b; Wang et al. 2018e; Xiong et al. 2018) | |
| <i>G. lobatum</i> (Cooke) G.F. Atk. | | Antitumor (Dai et al. 2009; Liu et al. 2018g); immunomodulation (Liu et al. 2018g) | |
| <i>G. lucidum</i> (Curtis) P. Karst. | | Antitumor, lowering blood pressure, improving immunity, antithrombotic (Dai et al. 2009; Zhang et al. 2009b; Cheng et al. 2017a; Xiao et al. 2018); antioxidant, biofortified with essential elements (Se, Cu, and Zn), immunomodulation, preventing radiation-induced DNA damage and apoptosis (Kozarski et al. 2011, 2012; Smina et al. 2011; Rzymiski et al. 2016; Li et al. 2017f) | |
| <i>G. multipileum</i> Ding Hou | | Antitumor (Dai et al. 2009; Xie et al. 2018a); improving immunity (Xie et al. 2018a) | |
| <i>G. mutabile</i> Y. Cao & H.S. Yuan | | Antitumor (Cao and Yuan 2013) | |
| <i>G. resinaceum</i> Boud. | | Antitumor (Dai et al. 2009) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>G. sinense</i> J.D. Zhao et al. | | Antitumor, anti-inflammatory, inducing diuresis, invigorating the stomach (Dai et al. 2009); antioxidant, antiproliferation, anti-HIV-1, immunomodulation, healing effect of radius fracture (Sato et al. 2009; Han et al. 2012; Qi and Chen 2013; Wang et al. 2016d; Ying et al. 2016; Liu et al. 2018k) | |
| <i>G. subresinosum</i> (Murrill) C.J. Humphrey | | Antioxidant (Dai et al. 2009; Thu 2013) | |
| <i>G. tenue</i> J.D. Zhao et al. | | Tranquilizing, treating hepatitis (Dai et al. 2009) | |
| <i>G. tropicum</i> (Jungh.) Bres. | | Treating coronary artery disease (Dai et al. 2009); antitumor (Hu et al. 2013) | |
| <i>G. tsugae</i> Murrill | | Calming the nervousness and invigorating the liver, antitumor (Dai et al. 2009; Liu et al. 2012b; Huang et al. 2016c); antimicrobial, antiproliferation, enhancing memory activity immunomodulation (Song et al. 2012; Dharmaraj et al. 2014; Chien et al. 2015; Huang et al. 2016c) | |
| <i>Geastrum fimbriatum</i> Fr. | | Anti-inflammation, haemostasis, detoxification (Dai et al. 2009); antibacteria, antioxidant, antitumor (Liu et al. 2018c) | |
| <i>G. rufescens</i> Pers. | | Haemostasis (Dai et al. 2009) | |
| <i>G. saccatum</i> Fr. | | Haemostasis (Dai et al. 2009) | |
| <i>G. triplex</i> Jungh. | | Haemostasis, disinfecting, clearing the lung, relieving sore throat, detoxification (Dai et al. 2009); antibacteria (Chittaragi et al. 2013) | |
| <i>G. velutinum</i> Morgan | | Haemostasis, detoxification (Dai et al. 2009) | |
| <i>Gerronema albidum</i> (Fr.) Singer | E | | |
| <i>Gibberella fujikuroi</i> (Sawada) S. Ito | | Relieving itching, treating dermatosis (Dai et al. 2009) | |
| <i>Gliophorus irrigatus</i> (Pers.) A.M. Ainsw. & P.M. Kirk | | | P |
| <i>G. psittacinus</i> (Schaeff.) Herink | E | | P |
| <i>Gloeophyllum sepiarium</i> (Wulfen) P. Karst. | | Antitumor (Dai et al. 2009) | |
| <i>G. trabeum</i> (Pers.) Murrill | | Antitumor (Dai et al. 2009) | |
| <i>Gloeostereum incarnatum</i> S. Ito & S. Imai | E | Improving immunity, antibacteria, antitumor (Dai et al. 2009; Chang 2015); antimicrobial, antioxidant, anti-inflammation (Kwon et al. 2014; Bunbamrung et al. 2017) | |
| <i>Gomphidius glutinosus</i> (Schaeff.) Fr. | E | | |
| <i>G. maculatus</i> (Scop.) Fr. | E | | |
| <i>G. roseus</i> (Fr.) Fr. | E | | |
| <i>G. subroseus</i> Kauffman | E | | |
| <i>Gomphus clavatus</i> (Pers.) Gray | E | Anticancer, antioxidant (Makropoulou et al. 2012; Ding et al. 2015b) | |
| <i>G. fujisanensis</i> (S. Imai) Parmasto | | | P |
| <i>G. orientalis</i> R.H. Petersen & M. Zang | E | | P |
| <i>G. purpuraceus</i> (Iwade) K. Yokoy. | E | | |
| <i>Grifola frondosa</i> (Dicks.) Gray | E | Treating hepatopathy and diabetes, anti-hypertensive, antitumor (Dai et al. 2009; Masuda et al. 2010; Huang et al. 2016d; Xu et al. 2018a); antidiabetic activity, antioxidant, antiviral, hypolipidemic, immunomodulation (Deng et al. 2009; Vetvicka and Vetvickova 2011; Yeh et al. 2011; Chen et al. 2012a; Yang et al. 2014; Ma et al. 2015; Zhao et al. 2015a; Han et al. 2016; Wei et al. 2017b) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>Guepinia helvelloides</i> (DC.) Fr. | E | | |
| <i>Gymnopilus aeruginosus</i> (Peck) Singer | | Antitumor (Dai et al. 2009) | P |
| <i>G. dilepis</i> (Berk. & Broome) Singer | | | P |
| <i>G. fulgens</i> (J. Favre & Maire) Singer | | | P |
| <i>G. junonius</i> (Fr.) P.D. Orton | | | P |
| <i>G. liquiritiae</i> (Pers.) P. Karst. | | Antitumor (Dai et al. 2009) | P |
| <i>G. penetrans</i> (Fr.) Murrill | | | P |
| <i>G. purpuratus</i> (Cooke & Masee) Singer | | | P |
| <i>G. spectabilis</i> (Fr.) Singer | | Antioxidant (Hu et al. 2018c) | P |
| <i>Gymnopus acervatus</i> (Fr.) Murrill | E | | |
| <i>G. confluens</i> (Pers.) Antonín et al. | E | Antibacteria, antifungus (Dai et al. 2009) | |
| <i>G. dryophilus</i> (Bull.) Murrill | E | | P |
| <i>G. erythropus</i> (Pers.) Antonín et al. | E | | |
| <i>G. fusipes</i> (Bull.) Gray | E | | |
| <i>G. ocior</i> (Pers.) Antonín & Noordel. | E | | |
| <i>G. peronatus</i> (Bolton) Gray | E | | P |
| <i>G. subnudus</i> (Ellis ex Peck) Halling | E | | |
| <i>Gyrodon lividus</i> (Bull.) Sacc. | E | | |
| <i>Gyromitra ambigua</i> (P. Karst.) Harmaja | | | P |
| <i>G. esculenta</i> (Pers.) Fr. | | | P |
| <i>G. gigas</i> (Krombh.) Cooke | | | P |
| <i>G. infula</i> (Schaeff.) Quél. | | | P |
| <i>G. splendida</i> Raitv. | | | P |
| <i>Gyroporus atroviolaceus</i> (Höhn.) E.-J. Gilbert | E | | |
| <i>G. castaneus</i> (Bull.) Quél. | E | Antitumor (Dai et al. 2009) | P |
| <i>G. cyanescens</i> (Bull.) Quél. | E | | |
| <i>G. longicystidiatus</i> Nagas. & Hongo | E | | |
| <i>G. pseudomicrosporus</i> M. Zang | E | | |
| <i>G. purpurinus</i> Singer ex Davoodian & Halling | E | | P |
| <i>Halorosellinia oceanica</i> (S. Schatz) Whalley et al. | | Antifungus (Dai et al. 2009) | |
| <i>Hebeloma crustuliniforme</i> (Bull.) Quél. | | | P |
| <i>H. fastibile</i> (Pers.) P. Kumm. | | | P |
| <i>H. laterinum</i> (Batsch) Vesterh. | | Antibacteria (Dai et al. 2009) | |
| <i>H. radicosum</i> (Bull.) Ricken | E | | P |
| <i>H. sacchariolens</i> Quél. | | | P |
| <i>H. sinapizans</i> (Paulet) Gillet | | | P |
| <i>H. sinuosum</i> (Fr.) Quél. | E | | P |
| <i>H. vinosophyllum</i> Hongo | | | P |
| <i>Heimioporus betula</i> (Schwein.) E. Horak | E | | |
| <i>H. conicus</i> N.K. Zeng & Zhu L. Yang, | | | P |
| <i>H. gaojiaocong</i> N.K. Zeng & Zhu L. Yang, | | | P |
| <i>H. japonicus</i> (Hongo) E. Horak | | | P |
| <i>Helvella acetabulum</i> (L.) Quél. | E | | P |
| <i>H. albipes</i> Fuckel | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>H. atra</i> J. König | E | | |
| <i>H. bachu</i> Q. Zhao et al. | E | | |
| <i>H. crispa</i> (Scop.) Fr. | E | | P |
| <i>H. elastica</i> Bull. | E | | P |
| <i>H. ephippium</i> Lév. | E | | |
| <i>H. lactea</i> Boud. | E | | |
| <i>H. lacunosa</i> Afzel. | E | Antioxidant (Wang and Bau 2016) | |
| <i>H. leucomelaena</i> (Pers.) Nannf. | | Antioxidant (Sevindik et al. 2018) | P |
| <i>H. macropus</i> (Pers.) P. Karst. | E | | |
| <i>H. orienticrispa</i> Q. Zhao et al. | E | | |
| <i>H. phlebophora</i> Pat. & Doass. | E | | |
| <i>H. pseudoreflexa</i> Q. Zhao et al. | | | P |
| <i>H. subspadicea</i> Q. Zhao et al. | E | | |
| <i>H. taiyuanensis</i> B. Liu et al. | E | | |
| <i>Hemistropharia albocrenulata</i> (Peck) Jacobsson & E. Larss. | E | | P |
| <i>Hericium coralloides</i> (Scop.) Pers. | E | Treating gastric ulcer and neurasthenia, promoting digestion (Dai et al. 2009) | |
| <i>H. erinaceus</i> (Bull.) Pers. | E | Antitumor, antithrombotic, anti-aging, lowering blood glucose and cholesterol, improving immunity (Dai et al. 2009; Ma et al. 2010b; Kim et al. 2011; Li et al. 2014c); antimicrobial, antioxidant, anti-inflammation, α -glucosidase inhibitor, hepatoprotection, immunomodulation, improvement of mild cognitive impairment, repair effects on gastric mucosal injury (Mori et al. 2009; Wong et al. 2009b; Zhang et al. 2012; Sheu et al. 2013; Jiang et al. 2014b; Wang et al. 2015a; Li et al. 2017a; Song et al. 2018d) | |
| <i>Heterobasidion parviorum</i> Niemelä & Korhonen | | Antibacteria (Dai et al. 2009) | |
| <i>Hexagonia apiaria</i> (Pers.) Fr. | | Tonifying intestines, promoting digestion (Dai et al. 2009; Zhang et al. 2017c); anti-inflammation (Thang et al. 2015) | |
| <i>H. tenuis</i> (Fr.) Fr. | | Antitrypanosomal activity (Umeyama et al. 2014) | |
| <i>Hohenbuehelia fluxilis</i> (Fr.) P.D. Orton | E | | |
| <i>H. grisea</i> (Peck) Singer | | Antibacteria, antitumor (Dai et al. 2009) | |
| <i>H. petaloides</i> (Bull.) Schulzer | E | Antitumor (Dai et al. 2009) | |
| <i>H. reniformis</i> (G. Mey.) Singer | E | | |
| <i>Homodermoporus martius</i> (Berk.) Teixeira | | Haemostasis, relieving itching (Dai et al. 2009) | |
| <i>Hortiboletus rubellus</i> (Krombh.) Simonini et al. | E | Antitumor (Dai et al. 2009) | |
| <i>H. subpaludosus</i> (W.F. Chiu) Xue T. Zhu & Zhu L. Yang | E | | P |
| <i>Hourangia cheoi</i> (W.F. Chiu) Xue T. Zhu & Zhu L. Yang | E | | P |
| <i>H. nigropunctata</i> (W.F. Chiu) Xue T. Zhu & Zhu L. Yang | E | | P |
| <i>Humidicutis marginata</i> (Peck) Singer | E | | |
| <i>Hydnellum conrescens</i> (Pers.) Banker | E | Antivirus (Lee et al. 2012a) | |
| <i>H. cumulatum</i> K.A. Harrison | E | | |
| <i>Hydnotrya cerebriformis</i> Harkn. | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>Hydnum repandum</i> L. | E | Antitumor (Dai et al. 2009) | |
| <i>H. rufescens</i> Pers. | E | | |
| <i>Hygrocybe cantharellus</i> (Fr.) Murrill | E | Antifungus (Chittaragi and Naika 2014) | |
| <i>H. ceracea</i> (Sowerby) P. Kumm. | E | | |
| <i>H. chlorophana</i> (Fr.) Wünsche | E | | |
| <i>H. coccinea</i> (Schaeff.) P. Kumm. | E | | |
| <i>H. conica</i> (Schaeff.) P. Kumm. | | Antioxidant (Chong et al. 2014) | P |
| <i>H. flavescens</i> (Kauffman) Singer | | | P |
| <i>H. miniata</i> (Fr.) P. Kumm. | E | | |
| <i>H. mucronella</i> (Fr.) P. Karst. | | | P |
| <i>H. ovina</i> (Bull.) Kühner | | | P |
| <i>H. persistens</i> var. <i>konradii</i> (R. Haller Aar.) Boertm. | E | | |
| <i>H. pratensis</i> (Fr.) Murrill | E | | |
| <i>H. punicea</i> (Fr.) P. Kumm. | E | | |
| <i>H. spadicea</i> (Scop.) P. Karst. | | | P |
| <i>H. suzukaensis</i> (Hongo) Hongo | | | P |
| <i>H. virginea</i> (Wulfen) P.D. Orton & Watling | E | | |
| <i>Hygrophoropsis aurantiaca</i> (Wulfen) Maire | E | Antioxidant, antiproliferation (Heleno et al. 2010; Nowak et al. 2016) | P |
| <i>Hygrophorus agathosmus</i> (Fr.) Fr. | E | | |
| <i>H. arbustivus</i> Fr. | E | | |
| <i>H. calophyllus</i> P. Karst. | E | | |
| <i>H. camarophyllus</i> (Alb. & Schwein.) Dumée et al. | E | | |
| <i>H. ceraceus</i> (Wulfen) Fr. | E | | |
| <i>H. chrysodon</i> (Batsch) Fr. | E | | |
| <i>H. discoideus</i> (Pers.) Fr. | E | | |
| <i>H. discoxanthus</i> (Fr.) Rea | E | | |
| <i>H. eburneus</i> (Bull.) Fr. | E | | |
| <i>H. erubescens</i> (Fr.) Fr. | E | | |
| <i>H. fagi</i> G. Becker & Bon | E | | |
| <i>H. hypothejus</i> (Fr.) Fr. | E | | |
| <i>H. inocybiformis</i> A.H. Sm. | E | | |
| <i>H. leucophaeus</i> (Scop.) Fr. | E | | |
| <i>H. lucorum</i> Kalchbr. | E | Antimicrobial, antioxidant, antitumor, immunomodulation (Gao et al. 2012; Shen et al. 2013b) | |
| <i>H. nemoreus</i> (Pers.) Fr. | E | | |
| <i>H. olivaceoalbus</i> (Fr.) Fr. | E | | |
| <i>H. pacificus</i> A.H. Sm. & Hesler | E | | |
| <i>H. personii</i> Arnolds | E | | |
| <i>H. poetarum</i> R. Heim | E | | |
| <i>H. pseudolucorum</i> A.H. Sm. & Hesler | E | | |
| <i>H. pudorinus</i> (Fr.) Fr. | E | | P |
| <i>H. russula</i> (Schaeff. ex Fr.) Kauffman | E | | |
| <i>H. speciosus</i> Peck | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>Hymenochaete porioides</i> T. Wagner & M. Fisch. | | Antitumor (Dai et al. 2009) | |
| <i>Hymenogaster cangyanshanensis</i> B. Liu | E | | |
| <i>H. fusisporus</i> (Masse & Rodway) G. Cunn. | E | | |
| <i>Hypholoma capnoides</i> (Fr.) P. Kumm. | | Antioxidant (Heleno et al. 2010) | P |
| <i>H. cinnabarinum</i> Teng | | | P |
| <i>H. dispersum</i> Quél. | | | P |
| <i>H. fasciculare</i> (Huds.) P. Kumm. | | Antitumor (Dai et al. 2009) | P |
| <i>H. lateritium</i> (Schaeff.) P. Kumm. | | | P |
| <i>H. radicosum</i> J.E. Lange | E | | |
| <i>H. sublateritium</i> (Fr.) Quél. | | Antitumor (Dai et al. 2009) | |
| <i>Hypocrea peltata</i> Berk. | | Antibacteria, antifungus (Dai et al. 2009) | |
| <i>Hypocrella bambusae</i> (Berk. & Broome) Sacc. | | Treating gastropathy, arthritis, psoriasis, vitiligo (Dai et al. 2009) | |
| <i>Hypomyces chrysospermus</i> Tul. & C. Tul. | | Haemostasis (Dai et al. 2009); anticancer, antimicrobial, antioxidant (Chakraborty et al. 2016) | |
| <i>H. hyalinus</i> (Schwein.) Tul. & C. Tul. | | Detoxifying mycetism (Dai et al. 2009) | |
| <i>Hypoxyton fragiforme</i> (Pers.) J. Kickx f. | | Anti-HIV (Dai et al. 2009) | |
| <i>Hypsizygus marmoreus</i> (Peck) H.E. Bigelow | E | Haemagglutination inhibition (Dai et al. 2009); antifungus, antihypertension, antioxidant, antiproliferation, anti-HBV, immunoenhancement (Suzuki et al. 2011; Xie et al. 2011; Kang et al. 2013; Liu et al. 2017b, 2018b; Wang et al. 2018b) | |
| <i>H. tessulatus</i> (Bull.) Singer | E | | |
| <i>H. ulmarius</i> (Bull.) Redhead | E | Antitumor (Dai et al. 2009); antidiabetic activity, antioxidant, anti-inflammation, hepatoprotection, lowering serum lipids, protecting vascular endothelium cells (Sun et al. 2010a; Meera et al. 2011; Shen et al. 2011; Greeshma et al. 2016; Wang et al. 2016f; Liu et al. 2018i) | |
| <i>Imleria badia</i> (Fr.) Vizzini | | Anti-inflammation (Grzywacz et al. 2016) | P |
| <i>Infundibulicybe geotropa</i> (Bull.) Harmaja | E | Antibacteria, antioxidant (Altuner and Akata 2010) | P |
| <i>Inocutis levis</i> (P. Karst.) Y.C. Dai | | Antitumor, treating diabetes (Dai et al. 2009) | |
| <i>I. rheades</i> (Pers.) Fiasson & Niemelä | | Haemostasis, anagesic, treating hemorrhoids (Dai et al. 2009) | |
| <i>I. tamaricis</i> (Pat.) Fiasson & Niemelä | | Haemostasis, anagesic, treating hemorrhoids (Dai et al. 2009) | |
| <i>Inocybe asterospora</i> Quél. | | | P |
| <i>I. auricoma</i> (Batsch) Sacc. | | | P |
| <i>I. bongardii</i> (Weinm.) Quél. | | | P |
| <i>I. brunnea</i> Quél. | | | P |
| <i>I. calamistrata</i> (Fr.) Gillet | | | P |
| <i>I. cincinnata</i> (Fr.) Quél. | | | P |
| <i>I. cookei</i> Bres. | | | P |
| <i>I. decipientoides</i> Peck | | | P |
| <i>I. dulcamara</i> (Pers.) P. Kumm. | | | P |
| <i>I. erubescens</i> A. Blytt | | | P |
| <i>I. flavobrunnea</i> Y.C. Wang | | | P |
| <i>I. flocculosa</i> Sacc. | | | P |
| <i>I. geophylla</i> (Bull.) P. Kumm. | | | P |
| <i>I. godeyi</i> Gillet | | | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>I. hirtella</i> Bres. | E | | |
| <i>I. lacera</i> (Fr.) P. Kumm. | | | P |
| <i>I. lanuginosa</i> (Bull.) P. Kumm. | | | P |
| <i>I. maculata</i> Boud. | | | P |
| <i>I. napipes</i> J.E. Lange | | | P |
| <i>I. nitidiuscula</i> (Britzelm.) Lapl. | | | P |
| <i>I. pallidicremea</i> Grund & D.E. Stuntz | | | P |
| <i>I. praetervisa</i> Quél. | | | P |
| <i>I. pyriodora</i> (Pers.) P. Kumm. | | | P |
| <i>I. radiata</i> Peck | | | P |
| <i>I. repanda</i> (Bull.) Quél. | | | P |
| <i>I. rimosa</i> (Bull.) P. Kumm. | | Antitumor, antieczematic (Dai et al. 2009) | P |
| <i>I. whitei</i> (Berk. & Broome) Sacc. | | | P |
| <i>Inonotus cuticularis</i> (Bull.) P. Karst. | | Haemostasis, antitumor (Dai et al. 2009) | |
| <i>I. hispidus</i> (Bull.) P. Karst. | | Improving digestion, haemostasis, antitumor (Dai et al. 2009; Liu et al. 2018h; Yang et al. 2019); activating the circulation to remove blood stasis, antibacteria, antioxidant, antihyperglycemic activity, immunomodulation, treatment of candidiasis (Li and Hu 2010; Wang et al. 2011c; Zan et al. 2011; Benarous et al. 2015; Li et al. 2018c; Jin et al. 2018) | |
| <i>I. obliquus</i> (Fr.) Pilát | | Improving immunity, lowering blood glucose, antitumor (Dai et al. 2009; Chen et al. 2010d; Jin et al. 2019); anticancer, antimicrobial, antioxidant, antiproliferation, anti-inflammation (Hu et al. 2009; Ma et al. 2013a; Guo et al. 2017; Yan and Xu 2018) | |
| <i>Ionomidotis fulvotigens</i> (Berk. & M.A. Curtis) E.K. Cash | | | P |
| <i>I. sprucei</i> (Berk.) E.J. Durand | | | P |
| <i>Irpex hydnooides</i> Y.W. Lim & H.S. Jung | | Lowering blood pressure, treating oliguria, edema and lumbago (Dai and Xiong 2008) | |
| <i>I. lacteus</i> (Fr.) Fr. | | Treating oliguria, edema and lumbago, lowering blood pressure (Dai et al. 2009); antiproliferation, anti-inflammation, immunomodulation, prevention and treatment of chronic glomerulonephritis (Wu et al. 2010; Wang et al. 2016a; Li et al. 2018a; Han et al. 2019) | |
| <i>Ischnoderma resinosum</i> (Schrad.) P. Karst. | | Antitumor (Dai et al. 2009) | |
| <i>Kobayasia nipponica</i> (Kobayasi) S. Imai & A. Kawam. | | | P |
| <i>K. mutabilis</i> (Schaeff.) Singer & A.H. Sm. | E | | |
| <i>Laccaria acanthospora</i> A.W. Wilson & G.M. Muell. | E | | |
| <i>L. alba</i> Zhu L. Yang & Lan Wang | E | | |
| <i>L. angustilamella</i> Zhu L. Yang & L. Wang | E | | |
| <i>L. aurantia</i> Popa et al. | E | | |
| <i>L. bullipellis</i> A.W. Wilson & G.M. Muell. | E | | |
| <i>L. fraterna</i> (Sacc.) Pegler | E | | |
| <i>L. fulvogrisea</i> Popn et al. | E | | |
| <i>L. himalayensis</i> A.W. Wilson & G.M. Muell. | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|---|------------------------------|
| <i>L. laccata</i> (Scop.) Cooke | E | Antitumor (Dai et al. 2009); antioxidant (Zhang et al. 2018b) | |
| <i>L. longipes</i> G.M. Muell. | E | | |
| <i>L. moshuijun</i> Popa & Zhu L. Yang | E | | |
| <i>L. negrimarginata</i> A.W. Wilson & G.M. Muell. | E | | |
| <i>L. salmonicolor</i> A.W. Wilson & G.M. Muell. | E | | |
| <i>L. tortilis</i> (Bolton) Cooke | E | Antitumor (Dai et al. 2009) | |
| <i>L. trichodermophora</i> G.M. Muell. | E | | |
| <i>L. vinaceoavellanea</i> Hongo | E | | |
| <i>L. yunnanensis</i> Popa et al. | E | | |
| <i>Lacrymaria lacrymabunda</i> (Bull.) Pat. | | | P |
| <i>Lactarius akahatsu</i> Nobuj. Tanaka | E | | |
| <i>L. angustizonatus</i> X.H. Wang | E | | |
| <i>L. aurantiacus</i> (Pers.) Gray | E | | |
| <i>L. blennius</i> (Fr.) Fr. | E | | P |
| <i>L. brachycystidiatus</i> X.H. Wang | E | | |
| <i>L. camphoratus</i> (Bull.) Fr. | E | | |
| <i>L. chichuensis</i> W.F. Chiu | E | Antitumor (Dai et al. 2009) | |
| <i>L. chrysorrheus</i> Fr. | E | | P |
| <i>L. cinnamomeus</i> W.F. Chiu | E | | |
| <i>L. circellatus</i> Fr. | E | | |
| <i>L. controversus</i> Pers. | E | Anticancer, antibiotic, antimicrobial, antioxidant (Altuner and Akata 2010; Novaković et al. 2016) | |
| <i>L. corrugis</i> Peck | E | | |
| <i>L. deliciosus</i> (L.) Gray | E | Antitumor (Dai et al. 2009; Ding et al. 2012; Liu et al. 2016a); anticancer, antimicrobial, antioxidant, immunostimulant (Hou et al. 2013a; Wen et al. 2014; Kosanić et al. 2016) | |
| <i>L. echinatus</i> Thiers | E | | |
| <i>L. flavidulus</i> S. Imai | E | Antiproliferation (Wu et al. 2011e) | |
| <i>L. fragilis</i> (Burl.) Hesler & A.H. Sm. | E | | |
| <i>L. fuliginosus</i> (Fr.) Fr. | E | | |
| <i>L. gerardii</i> Peck | E | | |
| <i>L. glyciosmus</i> (Fr.) Fr. | E | | |
| <i>L. hatsudake</i> Nobuj. Tanaka | E | Antitumor (Dai et al. 2009; Lin et al. 2018b); antioxidant, antiviral, lowering serum lipids (Tian and Xu 2015; Lin et al. 2018b) | |
| <i>L. hengduanensis</i> X.H. Wang | E | | |
| <i>L. hygrophoroides</i> Berk. & M.A. Curtis | E | Antitumor (Dai et al. 2009) | |
| <i>L. indigo</i> (Schwein.) Fr. | E | Antibacteria, antiproliferation (Ochoa-Zarzosa et al. 2011) | |
| <i>L. laeticolor</i> (S. Imai) Imazeki ex Hongo | E | | |
| <i>L. lignyotus</i> Fr. | | Antitumor (Dai et al. 2009) | P |
| <i>L. musteus</i> Fr. | E | | |
| <i>L. necator</i> (Bull.) Pers. | E | | P |
| <i>L. obliquus</i> Fr. | E | | |
| <i>L. oomsisiensis</i> Verbeken & Halling | | | P |
| <i>L. pallidus</i> Pers. | E | Antitumor (Dai et al. 2009) | |
| <i>L. picinus</i> Fr. | E | Treating lumbago and skelalgia, limb numbness (Dai et al. 2009) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>L. porninsis</i> Rolland | E | | |
| <i>L. pseudohatsudake</i> X.H. Wang | E | | |
| <i>L. pubescens</i> Fr. | E | Antioxidant (Sharma and Gautam 2016) | P |
| <i>L. pyrogalus</i> (Bull.) Fr. | | | P |
| <i>L. quietus</i> (Fr.) Fr. | E | Antioxidant (Reis et al. 2011b) | |
| <i>L. repraesentaneus</i> Britzelm. | | | P |
| <i>L. romagnesii</i> Bon | E | | |
| <i>L. rubrobrunneus</i> H.T. Le & Nuytinck | | | P |
| <i>L. rufus</i> (Scop.) Fr. | | Antinociceptive, anti-inflammation (Ruthes et al. 2013) | P |
| <i>L. rugatus</i> Kühner & Romagn. | E | | |
| <i>L. salmonicolor</i> R. Heim & Leclair | E | Antioxidant (Athanasakis et al. 2013) | |
| <i>L. sanguifluus</i> (Paulet) Fr. | E | Antibacteria, antioxidant, antiviral (Sagar and Thakur 2013; Thakur and Sayeed 2014) | |
| <i>L. scrobiculatus</i> (Scop.) Fr. | | | P |
| <i>L. serifluus</i> (DC.) Fr. | E | | |
| <i>L. sinozonarius</i> X.H. Wang | E | | |
| <i>L. subdulcis</i> (Pers.) Gray | E | | |
| <i>L. subzonarius</i> Hongo | E | Antitumor (Dai et al. 2009) | P |
| <i>L. thynos</i> A.H. Sm. | E | | |
| <i>L. torminosus</i> (Schaeff.) Gray | | | P |
| <i>L. uvidus</i> (Fr.) Fr. | E | | P |
| <i>L. vellereus</i> (Fr.) Fr. | E | Treating lumbago and skelalgia, limb numbness, antitumor (Dai et al. 2009); antifungal, antimicrobial, antioxidant immunosuppressive (Guler et al. 2009; Ji et al. 2011; Dogan and Aydin 2013; Rong et al. 2018) | P |
| <i>L. vietus</i> (Fr.) Fr. | E | | |
| <i>L. violascens</i> (J. Otto) Fr. | E | | |
| <i>L. vividus</i> X.H. Wang et al. | E | | |
| <i>L. volemus</i> (Fr.) Fr. | E | Antitumor (Dai et al. 2009; Hu et al. 2014b); antioxidant (Xie et al. 2015a; Huang et al. 2017a) | |
| <i>L. zonarius</i> (Bull.) Fr. | | Treating lumbago and skelalgia, limb numbness (Dai et al. 2009) | P |
| <i>Lactifluus luteolus</i> (Peck) Verbeke | E | | |
| <i>L. piperatus</i> (L.) Roussel | E | Treating lumbago and skelalgia, limb numbness, antitumor (Dai et al. 2009) | P |
| <i>L. subvellereus</i> (Peck) Nuytinck | | | P |
| <i>L. tenuicystidiatus</i> (X.H. Wang & Verbeke) X.H. Wang | E | | |
| <i>Laeticorticium roseum</i> (Pers.) Donk | | Antibiotics (Dai et al. 2009) | |
| <i>Laetiporus ailaoshanensis</i> B.K. Cui & J. Song | E | | |
| <i>L. cremeiporus</i> Y. Ota & T. Hatt. | E | Antioxidant (Li et al. 2014b) | |
| <i>L. medogensis</i> J. Song & B.K. Cui | E | | |
| <i>L. montanus</i> Černý ex Tomšovský & Jankovský | E | | |
| <i>L. sulphureus</i> (Bull.) Murrill | E | Invigorating qi and replenishing blood, antitumor (Dai et al. 2009; Hu et al. 2018a); antimicrobial, antioxidant (Petrović et al. 2014; Hu et al. 2018a) | |
| <i>L. versisporus</i> (Lloyd) Imazeki | E | | |
| <i>L. xinjiangensis</i> J. Song et al. | E | | |
| <i>L. zonatus</i> B.K. Cui & J. Song | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>Lanmaoa asiatica</i> G. Wu & Zhu L. Yang | E | Antitumor (Dai et al. 2009); immunomodulation (Su et al. 2018) | P |
| <i>Lanopila nipponica</i> Kawam. ex Kobayasi | E | | |
| <i>Laricifomes officinalis</i> (Vill.) Kotl. & Pouzar | | Inducing diuresis, treating gastropathy, detumescence, antitumor (Dai et al. 2009; Wang et al. 2015c); antioxidant, antiviral (Tepljakova et al. 2012; Wang et al. 2015c) | |
| <i>Lasiosphaera fenzlii</i> (Reichardt) Fenzl | | Haemostasis, detumescence, clearing the lung, detoxification, relieving sore throat (Dai et al. 2009); antioxidant, antitumor (Huang 2010; Shi et al. 2018) | |
| <i>Laternea columnata</i> Nees | | | P |
| <i>Leccinellum crocipodium</i> (Letell.) Della Magg. & Trassin. | E | Antiproliferation (Liu et al. 2016e) | |
| <i>L. griseum</i> (Quél.) Bresinsky & Manfr. Binder | E | | |
| <i>Leccinum atrostitipitatum</i> A.H. Sm. et al. | E | | |
| <i>L. aurantiacum</i> (Bull.) Gray | E | Antioxidant (Witkowska et al. 2011) | |
| <i>L. duriusculum</i> (Schulzer ex Kalchbr.) Singer | E | | |
| <i>L. holopus</i> (Rostk.) Watling | E | | |
| <i>L. oxydabile</i> (Singer) Singer | E | | |
| <i>L. quercinum</i> (Pilát) E.E. Green & Watling | E | | |
| <i>L. rubropunctum</i> (Peck) Singer | E | | |
| <i>L. rugosiceps</i> (Peck) Singer | E | | |
| <i>L. scabrum</i> (Bull.) Gray | E | | P |
| <i>L. subglabripes</i> (Peck) Singer | E | | |
| <i>L. subradicatum</i> Hongo | E | | |
| <i>L. variicolor</i> Watling | E | | |
| <i>L. versipelle</i> (Fr. & Hök) Snell | E | | |
| <i>Lentinellus brunescens</i> Lj.N. Vassiljeva | E | | |
| <i>L. cochleatus</i> (Pers.) P. Karst. | E | Antitumor (Dai et al. 2009) | |
| <i>L. micheneri</i> (Berk. & M.A. Curtis) Pegler | | Antibacteria (Dai et al. 2009) | |
| <i>L. ursinus</i> (Fr.) Kühner | E | | |
| <i>Lentinula edodes</i> (Berk.) Pegler | E | Improving immunity, lowering cholesterol and blood pressure, antitumor (Dai et al. 2009; Luan et al. 2017; Jiao et al. 2018a); antioxidant (Kozarski et al. 2012; Zeng et al. 2018b) | |
| <i>Lentinus crinitus</i> (L.) Fr. | | Antibacteria, antifungus (Dai et al. 2009) | |
| <i>L. cyathiformis</i> (Schaeff.) Bres. | E | | |
| <i>L. sajor-caju</i> (Fr.) Fr. | E | Antihypertension, antioxidant (Eguchi et al. 2014; Dulay et al. 2015) | |
| <i>L. squarrosulus</i> Mont. | E | Antioxidant, antiulcer, improving immunity (Bhunia et al. 2010; Omar et al. 2011; Wu et al. 2018b) | |
| <i>L. strigosus</i> Fr. | | Treating scabs, antitumor (Dai et al. 2009) | |
| <i>L. tigrinus</i> (Bull.) Fr. | E | Lowering blood glucose (Dai et al. 2009); antimicrobial, antioxidant (Dyakov et al. 2011; Dulay et al. 2015) | |
| <i>L. tuber-regium</i> (Fr.) Fr. | E | Antitumor, antibacteria, treating cardiovascular and neurological diseases (Dai et al. 2009; Manjunathan and Kaviyaranan 2010) | |
| <i>Lenzites betulinus</i> (L.) Fr. | | Dispelling cold, relaxing tendons (Dai et al. 2009); anticancer, antimicrobial, antioxidant (Liu et al. 2013c, 2014; Shen et al. 2017b) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>Lepiota brunneoincarnata</i> Chodat & C. Martín | | | P |
| <i>L. brunneolilacea</i> Bon & Boiffard | | | P |
| <i>L. castanea</i> Quél. | | | P |
| <i>L. clypeolaria</i> (Bull.) P. Kumm. | | | P |
| <i>L. cristata</i> (Bolton) P. Kumm. | | | P |
| <i>L. cristatanea</i> J.F. Liang & Zhu L. Yang | | | P |
| <i>L. erminea</i> (Fr.) P. Kumm. | E | | |
| <i>L. prominens</i> Sacc. | E | | |
| <i>L. venenata</i> Zhu L. Yang & Z.H. Chen | | | P |
| <i>Lepista caespitosa</i> (Bres.) Singer | E | Antioxidant (Li et al. 2015a) | |
| <i>L. flaccida</i> (Sowerby) Pat. | E | | |
| <i>L. glaucocana</i> (Bres.) Singer | E | | |
| <i>L. graveolens</i> (Peck) Dermek | E | | |
| <i>L. irina</i> (Fr.) H.E. Bigelow | | Antitumor (Dai et al. 2009); antioxidant (Chen et al. 2009) | P |
| <i>L. luscina</i> (Fr.) Singer | | Antitumor (Dai et al. 2009); antibacteria (Krupodorova et al. 2016) | |
| <i>L. nuda</i> (Bull.) Cooke | E | Antibacteria, antitumor (Dai et al. 2009); antioxidant (Li et al. 2015a, 2017e) | |
| <i>L. personata</i> (Fr.) Cooke | E | | |
| <i>L. sordida</i> (Schumach.) Singer | E | Calming the nervousness, invigorating the liver (Dai et al. 2009); antibacteria, antioxidant, antitumor, immunomodulation, treating laryngeal cancer (Chen et al. 2011c; Li et al. 2015d; Hu et al. 2017c; Zhang et al. 2017d) | |
| <i>Leratiomyces squamosus</i> (Pers.) Bridge & Spooner | | | P |
| <i>Leucoagaricus americanus</i> (Peck) Vellinga | E | | P |
| <i>L. carneifolius</i> (Gillet) Wasser | | Antibiotics (Dai et al. 2009) | |
| <i>L. leucothites</i> (Vittad.) Wasser | E | Antimicrobial, antioxidant (Aslim and Ozturk 2011) | P |
| <i>L. nymphaeum</i> (Kalchbr.) Bon | E | | |
| <i>Leucocalocybe mongolica</i> (S. Imai) X.D. Yu & Y.J. Yao | E | Relieving fever, treating measles (Dai et al. 2009) | |
| <i>Leucocoprinus birnbaumii</i> (Corda) Singer | | | P |
| <i>L. cepistipes</i> (Sowerby) Pat. | | | P |
| <i>L. cygneus</i> (J.E. Lange) Bon | | | P |
| <i>Leucocortinarius bulbiger</i> (Alb. & Schwein.) Singer | E | | |
| <i>Leucocybe candicans</i> (Pers.) Vizzini et al. | | Antibacteria (Dai et al. 2009) | P |
| <i>L. connata</i> (Schumach.) Vizzini et al. | E | | P |
| <i>Leucopaxillus albissimus</i> (Peck) Singer | E | | P |
| <i>L. alboalutaceus</i> (F.H. Møller & Jul. Schäff.) F.H. Møller | E | | |
| <i>L. amarus</i> (Alb. & Schwein.) Kühner | E | | |
| <i>L. giganteus</i> (Sowerby) Singer | E | Invigorating qi, relieving fever, treating cold and flu, tuberculosis (Dai et al. 2009); antimicrobial, antioxidant (Bao et al. 2016; Feleke and Doshi 2017) | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>L. tricolor</i> (Peck) Kühner | E | | |
| <i>Lichenomphalia umbellifera</i> (L.) Redhead et al. | E | | |
| <i>Lignosus hainanensis</i> B.K. Cui | | Treating hepatopathy and gastropathy (Cui et al. 2011) | |
| <i>L. rhinocerus</i> (Cooke) Ryvardeen | | Treating hepatopathy and gastropathy (Dai et al. 2009); anticancer, antimicrobial, antioxidant, antiproliferation, anti-inflammation, immunomodulation, neurite outgrowth stimulation, thrombolytic activity (Wong et al. 2009a; Guo et al. 2011a; Eik et al. 2012; Lee et al. 2012b, 2014b; Mohanarji et al. 2012; Ahmed et al. 2013; John et al. 2013; Lau et al. 2013, 2014; Phan et al. 2013a; Suziana Zaila et al. 2013; Yap et al. 2013; Hu et al. 2017b) | |
| <i>Limacella glioderma</i> (Fr.) Maire | E | | |
| <i>L. guttata</i> (Pers.) Konrad & Maubl. | E | | |
| <i>L. illinita</i> (Fr.) Maire | E | | |
| <i>L. ochraceolutea</i> P.D. Orton | E | | |
| <i>Lycoperdon asperum</i> (Lév.) Speg. | E | Haemostasis, antibacteria (Dai et al. 2009) | |
| <i>L. atropurpureum</i> Vittad. | E | | |
| <i>L. excipuliforme</i> (Scop.) Pers. | E | Antioxidant (Kalyoncu et al. 2010) | |
| <i>L. fuscum</i> Bonord. | E | Haemostasis (Dai et al. 2009) | |
| <i>L. glabrescens</i> Berk. | E | | |
| <i>L. mammiforme</i> Pers. | | Haemostasis, antibacteria (Dai et al. 2009) | |
| <i>L. marginatum</i> Kalchbr. | | | P |
| <i>L. pedicellatum</i> Peck | E | Treating pulmonary diseases (Gong et al. 2017) | |
| <i>L. perlatum</i> Pers. | E | Detumescence, haemostasis, antibacteria, clearing the lung, relieving sore throat, detoxification (Dai et al. 2009); antimicrobial, antioxidant (Ramesh and Pattar 2010) | |
| <i>L. pratense</i> Pers. | E | | |
| <i>L. pyriforme</i> Schaeff. | E | Antitumor, antibacteria, haemostasis, clearing the lung, relieving sore throat, detoxification (Dai et al. 2009) | |
| <i>L. subincarnatum</i> Peck | E | | |
| <i>L. umbrinum</i> Pers. | E | Anti-inflammatory, haemostasis, antibacteria (Dai et al. 2009) | |
| <i>L. utriiforme</i> Bull. | E | Anti-inflammatory, haemostasis, antibacteria, detoxification (Dai et al. 2009); prevention of diabetes type II and Alzheimer's disease, antioxidant (Akata et al. 2019) | |
| <i>L. wrightii</i> Berk. & M.A. Curtis | | Haemostasis, anti-inflammatory, antibacteria, detoxification (Dai et al. 2009) | |
| <i>Lyophyllum decastes</i> (Fr.) Singer | E | Antitumor (Dai et al. 2009; Gao et al. 2016b; Wei et al. 2016); antimicrobial, lowering blood glucose (Pushpa and Purushothama 2010; Gao et al. 2016b) | |
| <i>L. fumosum</i> (Pers.) P.D. Orton | E | | |
| <i>L. lorcatum</i> (Fr.) Kühner | E | | |
| <i>L. semitale</i> (Fr.) Kühner | E | Antitumor (Dai et al. 2009) | |
| <i>L. shimeji</i> (Kawam.) Hongo | E | Antibacteria, antiviral (Krupodorova et al. 2014, 2016) | |
| <i>L. transforme</i> (Sacc.) Singer | E | Antitumor (Dai et al. 2009) | |
| <i>L. trigonosporum</i> (Bres.) Kühner | E | | |
| <i>Lysurus mokusin</i> (L.) Fr. | | Antitumor (Dai et al. 2009) | P |
| <i>Macrocybe gigantea</i> (Masse) Pegler & Lodge | E | Antitumor (Dai et al. 2009); antioxidant, hepatoprotection (Acharya et al. 2012; Gaur and Rao 2016) | |
| <i>M. lobayensis</i> (R. Heim) Pegler & Lodge | E | Improving immunity, antitumor (Dai et al. 2009) | |
| <i>Macrolepiota detersa</i> Z.W. Ge et al. | E | Antioxidant (Zhu et al. 2017a) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>M. dolichaula</i> (Berk. & Broome) Pegler & R.W. Rayner | E | Antimicrobial (Rizal et al. 2016) | |
| <i>M. excoriata</i> (Schaeff.) Wasser | E | Antioxidant (Kalyoncu et al. 2010) | P |
| <i>M. gracilentata</i> (Krombh.) Wasser | E | | |
| <i>M. mastoidea</i> (Fr.) Singer | E | | |
| <i>M. procera</i> (Scop.) Singer | E | Promoting digestion (Dai et al. 2009); anticancer, antimicrobial, antioxidant (Kosanić et al. 2016) | P |
| <i>M. subcitrifolia</i> Z.W. Ge | E | | |
| <i>M. velosa</i> Vellinga & Zhu L. Yang | E | | |
| <i>Marasmiellus ramealis</i> (Bull.) Singer | | Antibacteria, antitumor (Dai et al. 2009) | |
| <i>Marasmius androsaceus</i> (L.) Fr. | | Treating arthritis, antitumor (Dai et al. 2009); anagesic effect on neuropathic pain (Zhao et al. 2016b) | |
| <i>M. cohaerens</i> (Pers.) Cooke & Quéf. | | | P |
| <i>M. conigenus</i> (Pers.) P. Karst. | | Antibacteria (Dai et al. 2009) | |
| <i>M. maximus</i> Hongo | E | | |
| <i>M. oreades</i> (Bolton) Fr. | E | Treating lumbago and skelalgia, limb numbness, antitumor (Dai et al. 2009) | |
| <i>Mattiolomyces terfezioides</i> (Mattir.) E. Fisch. | E | | |
| <i>Megacollybia clitocyboidea</i> R.H. Petersen et al. | E | Antitumor (Dai et al. 2009) | P |
| <i>Melanoleuca arcuata</i> (Bull.) Singer | E | | |
| <i>M. brevipes</i> (Bull.) Pat. | E | | |
| <i>M. cognata</i> (Fr.) Konrad & Maubl. | E | | |
| <i>M. excissa</i> (Fr.) Singer | E | | |
| <i>M. graminicola</i> Kühner & Maire | E | | |
| <i>M. grammopodia</i> (Bull.) Murrill | E | | |
| <i>M. leucopoda</i> X.D. Yu | E | | |
| <i>M. melaleuca</i> (Pers.) Murrill | E | | |
| <i>M. paedida</i> (Fr.) Kühner & Maire | E | | |
| <i>M. porphyropoda</i> X.D. Yu | E | | |
| <i>M. strictipes</i> (P. Karst.) Jul. Schäff. | E | | |
| <i>M. subalpina</i> (Britzelm.) Bresinsky & Stangl | E | | |
| <i>M. substrictipes</i> Kühner | E | | |
| <i>M. verrucipes</i> (Fr.) Singer | E | | |
| <i>Mensularia radiata</i> (Sowerby) Lázaro Ibiza | | Antitumor (Dai et al. 2009) | |
| <i>Meripilus giganteus</i> (Pers.) P. Karst. | | Antibacteria, antioxidant (Karaman et al. 2014) | P |
| <i>Metacordyceps liangshanensis</i> (M. Zang et al.) G.H. Sung et al. | E | Tranquilizing, invigorating kidney, treating pulmonary diseases, antitumor (Dai et al. 2009) | |
| <i>M. neogunnii</i> T.C. Wen & K.D. Hyde | E | Anagesic, lowering blood pressure, improving immunity (Dai et al. 2009); antioxidant, antitumor, immunomodulation (Zhu et al. 2009, 2012a, b, 2017d; Zhao and Lv 2018) | |
| <i>Mitrophora semilibera</i> (DC.) Lév. | E | | |
| <i>Monascus purpureus</i> Went | | Relieving dyspepsia, promoting blood circulation, invigorating the spleen, anagesic (Dai et al. 2009); antidiabetic activity, antihyperlipidemic activity, antioxidant (Shi and Pan 2010; Jia et al. 2017; Yang et al. 2017b) | |
| <i>M. ruber</i> Tiegh. | | Lowering serum lipids (Dai et al. 2009) | |
| <i>Montagnea arenaria</i> (DC.) Zeller | E | Anti-inflammatory, haemostasis (Dai et al. 2009) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>M. tenuis</i> (Pat.) Teng | | Anti-inflammatory, haemostasis (Dai et al. 2009) | |
| <i>Morchella angusticeps</i> Peck | E | Treating gastrointestinal disease (Dai et al. 2009); antiproliferation, antioxidant (Gursoy et al. 2009; Zheng et al. 2016; Liao et al. 2017) | |
| <i>M. continua</i> Tratt. | E | Anti-aging, anti-gastric ulcer (Gao et al. 2011; Ma et al. 2014e; Richard et al. 2015) | |
| <i>M. costata</i> Pers. | E | | |
| <i>M. crassipes</i> (Vent.) Pers. | E | Improving digestion, dissipating phlegm (Dai et al. 2009); antioxidant (Gursoy et al. 2009; Li et al. 2017d) | |
| <i>M. deliciosa</i> Fr. | E | Improving digestion, dissipating phlegm (Dai et al. 2009); antioxidant (Gursoy et al. 2009) | |
| <i>M. elata</i> Fr. | E | Antioxidant (Gursoy et al. 2009) | |
| <i>M. esculenta</i> (L.) Pers. | E | Tonifying intestines, dissipating phlegm, invigorating kidney, antitumor (Dai et al. 2009; Li et al. 2016a); antimicrobial, antioxidant, immunomodulation (Zhang et al. 2009a; Meng et al. 2010; Heleno et al. 2013; Li et al. 2016a; Luo et al. 2018) | |
| <i>M. hortensis</i> Boud. | | Antitumor (Dai et al. 2009) | |
| <i>M. importuna</i> M. Kuo et al. | E | | |
| <i>M. miyabeana</i> S. Imai | E | | |
| <i>M. septimelata</i> M. Kuo | E | | |
| <i>M. sextelata</i> M. Kuo | E | Antioxidant, neuroprotective (Xiong et al. 2017a) | |
| <i>M. vulgaris</i> (Pers.) Gray | E | Tonifying intestines, dissipating phlegm (Dai et al. 2009) | |
| <i>Mutinus caninus</i> (Huds.) Fr. | | | P |
| <i>Mycena alcalina</i> (Fr.) P. Kumm. | | Antitumor (Dai et al. 2009) | |
| <i>M. galericulata</i> (Scop.) Gray | E | Antitumor (Dai et al. 2009) | |
| <i>M. galopus</i> (Pers.) P. Kumm. | E | | |
| <i>M. haematopus</i> (Pers.) P. Kumm. | | Antitumor (Dai et al. 2009) | P |
| <i>M. pelianthina</i> (Fr.) Quél. | | | P |
| <i>M. pura</i> (Pers.) P. Kumm. | | Antitumor (Dai et al. 2009) | P |
| <i>M. roseomarginata</i> Hongo | | Antitumor (Dai et al. 2009) | |
| <i>M. subaquosa</i> A.H. Sm. | | Antitumor (Dai et al. 2009) | |
| <i>M. viridimarginata</i> P. Karst. | | Antibiotics (Dai et al. 2009) | |
| <i>Mycenastrum corium</i> (Guers.) Desv. | E | Detumescence, haemostasis, detoxification, relieving sore throat (Dai et al. 2009) | |
| <i>Mycetinis scorodonius</i> (Fr.) A.W. Wilson & Desjardin | E | Antibacteria, antifungal (Dai et al. 2009) | |
| <i>Mycoleptodonoides aitchisonii</i> (Berk.) Maas Geest. | E | Antidiabetic activity, antioxidant, immune stimulation (Choi et al. 2016; Xu et al. 2017a) | |
| <i>Naematelia aurantialba</i> (Bandoni & M. Zang) Millanes & Wedin | E | Treating breathless, dissipating phlegm, treating tracheitis, anti-hypertensive (Dai et al. 2009); antioxidant, lowering blood glucose, immunostimulant (Du et al. 2010; Guo et al. 2012; Deng et al. 2017) | |
| <i>Naematoloma gracile</i> Hongo | | | P |
| <i>Neoboletus brunneissimus</i> (W.F. Chiu) Gelardi et al. | E | Relieving fever (Dai et al. 2009); antitumor, lowering blood glucose, immunomodulation (Yang et al. 2018) | |
| <i>N. erythropus</i> (Pers.) C. Hahn | E | Antitumor (Dai et al. 2009) | P |
| <i>Neobulgaria pura</i> (Pers.) Petr. | | Antibiotics (Dai et al. 2009) | P |
| <i>Neolentinus adhaerens</i> (Alb. & Schwein.) Redhead & Ginns | E | Antitumor (Dai et al. 2009) | |
| <i>N. lepideus</i> (Fr.) Redhead & Ginns | E | Antitumor (Dai et al. 2009; Wang et al. 2015d); antihyperlipidemic activity, antimicrobial, antioxidant, immunomodulation (Yoon et al. 2011a, b; Wang et al. 2015d; Castillo et al. 2017) | P |
| <i>Nidula niveotomentosa</i> (Henn.) Lloyd | | Antifungus (Dai et al. 2009) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|---|------------------------------|
| <i>Nothopanus eugrammus</i> (Mont.) Singer | E | | |
| <i>Omphalia lapidescens</i> (Horan.) E. Cohn & J. Schröt. | | Antitumor, anthelmintic action, improving immunity, relieving fever (Dai et al. 2009); antioxidant, antiproliferation (Xu et al. 2011; Zhao et al. 2017a) | P |
| <i>Omphalina mutila</i> (Fr.) P.D. Orton | | Antibacteria (Dai et al. 2009) | |
| <i>Omphalotus flagelliformis</i> Zhu L. Yang & B. Feng | | | P |
| <i>O. japonicus</i> (Kawam.) Kirchn. & O.K. Mill. | | Antitumor (Dai et al. 2009) | P |
| <i>O. olearius</i> (DC.) Singer | | Antibiotics (Dai et al. 2009); antioxidant (Kalyoncu et al. 2010) | P |
| <i>Onnia flavida</i> (Berk.) Y.C. Dai | | Antitumor (Dai et al. 2009) | |
| <i>O. vallata</i> (Berk.) Y.C. Dai & Niemelä | | Antitumor (Dai et al. 2009) | |
| <i>Ophiocordyceps highlandensis</i> Zhu L. Yang & J. Qin | | Tranquilizing, invigorating kidney, treating pulmonary diseases, antitumor (Dai et al. 2009); immunomodulation, invigorating kidney (Liu et al. 2018e; Xu et al. 2018b) | |
| <i>O. jiangxiensis</i> (Z.Q. Liang et al.) G.H. Sung et al. | | | P |
| <i>O. nutans</i> (Pat.) G.H. Sung et al. | | Invigorating the lung and kidney (Dai et al. 2009) | |
| <i>O. oxycephala</i> (Penz. & Sacc.) G.H. Sung et al. | | Antitumor (Dai et al. 2009) | |
| <i>O. sinensis</i> (Berk.) G.H. Sung et al. | E | Tranquilizing, invigorating kidney, treating pulmonary diseases, antitumor (Dai et al. 2009); immunomodulation, invigorating kidney (Liu et al. 2018e; Xu et al. 2018b) | |
| <i>O. sobolifera</i> (Hill ex Watson) G.H. Sung et al. | E | Relieving fever, detoxification, treating diabetes (Dai et al. 2009); amelioration of renal tubulointerstitial fibrosis, anticonvulsion, antinociception, protection of renal ischemia reperfusion injury (Liu et al. 2012c; Peng et al. 2015b; Zhu et al. 2016, 2017c) | P |
| <i>O. sphecocephala</i> (Klotzsch ex Berk.) G.H. Sung et al. | | Reinforcing insufficiency, improving lung and invigorating kidney, hemostasis and resolving phlegm (Dai et al. 2009) | |
| <i>Ossicaulis lignatilis</i> (Pers.) Redhead & Ginns | E | | |
| <i>Osteina obducta</i> (Berk.) Donk | E | Antitumor (Dai et al. 2009) | |
| <i>Otidea cochleata</i> (L.) Fuckel | | | P |
| <i>Oudemansiella amygdaliformis</i> Zhu L. Yang & M. Zang | E | | |
| <i>O. bii</i> Zhu L. Yang & Li F. Zhang | E | | |
| <i>O. brunneomarginata</i> Lj.N. Vassiljeva | E | | |
| <i>O. canarii</i> (Jungh.) Höhn. | E | | |
| <i>O. furfuracea</i> (Peck) Zhu L. Yang et al. | E | Antioxidant (Wang et al. 2017b) | |
| <i>O. orientalis</i> Zhu L. Yang | E | | |
| <i>O. raphanipes</i> (Berk.) Pegler & T.W.K. Young | E | | |
| <i>O. submucida</i> Corner | E | Antifungus, antitumor (Dai et al. 2009) | |
| <i>O. yunnanensis</i> Zhu L. Yang & M. Zang | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>Oxyporus corticola</i> (Fr.) Ryvarden | | Antibacteria, antitumor (Dai et al. 2009) | |
| <i>Paecilomyces hepiali</i> Q.T. Chen et al. | | Antidiabetic activity, antioxidant, anti-fatigue, anti-hypoxia, treating hyperuricemia (Xu et al. 2014; Jiang et al. 2017; Ma et al. 2018; Yuan et al. 2018a) | |
| <i>Panaeolina foeniseccii</i> (Pers.) Maire | | | P |
| <i>Panaeolus acuminatus</i> Quél. | | | P |
| <i>P. alcis</i> M.M. Moser | | | P |
| <i>P. antillarum</i> (Fr.) Dennis | | | P |
| <i>P. ater</i> (J.E. Lange) Kühner & Romagn. ex Bon | | | P |
| <i>P. bisporus</i> (Malençon & Bertault) Ew. Gerhardt | | | P |
| <i>P. cinctulus</i> (Bolton) Sacc. | | | P |
| <i>P. cyanescens</i> Sacc. | | | P |
| <i>P. fimicola</i> (Pers.) Gillet | | | P |
| <i>P. papilionaceus</i> (Bull.) Quél. | | | P |
| <i>P. semiovatus</i> (Sowerby) S. Lundell & Nannf. | | | P |
| <i>P. sepulchralis</i> (Berk.) Sacc. | | | P |
| <i>P. solidipes</i> (Peck) Sacc. | | | P |
| <i>P. subbalteatus</i> (Berk. & Broome) Sacc. | | | P |
| <i>P. tropicalis</i> Ola'h | | | P |
| <i>P. stipticus</i> (Bull.) P. Karst. | | Haemostasis, antitumor (Dai et al. 2009) | P |
| <i>Panus conchatus</i> (Bull.) Fr. | E | Treating lumbago and skelalgia, limb numbness, antitumor (Dai et al. 2009) | |
| <i>P. giganteus</i> (Berk.) Corner | | Antioxidant (Qi et al. 2018) | |
| <i>Paralepista maculosa</i> (Sacc.) Vizzini | | | P |
| <i>Paralepistopsis acromelalga</i> (Ichimura) Vizzini | | | P |
| <i>Parasola plicatilis</i> (Curtis) Redhead et al. | | Antitumor (Dai et al. 2009) | |
| <i>Paraxerula ellipsospora</i> Zhu L. Yang & J. Qin | E | | |
| <i>P. hongoi</i> (Dörfelt) R.H. Petersen | E | | |
| <i>Paxillus involutus</i> (Batsch) Fr. | | Treating lumbago and skelalgia, limb numbness (Dai et al. 2009); antioxidant (Reis et al. 2011a) | P |
| <i>P. orientalis</i> Gelardi et al. | | | P |
| <i>P. rubicundulus</i> P.D. Orton | | | P |
| <i>Paxina macropus</i> (Clem.) Seaver | | | P |
| <i>Perenniporia robiniophila</i> (Murrill) Ryvarden | | Improving immunity, antitumor (Dai et al. 2009); antioxidant (Li et al. 2017b) | |
| <i>P. subacida</i> (Peck) Donk | | Antitumor (Dai et al. 2009); antioxidant, antitumor, relieving itching (Li et al. 2017b; Guo et al. 2018b) | |
| <i>Peziza arvernensis</i> Roze & Boud. | E | | P |
| <i>P. badia</i> Pers. | | | P |
| <i>P. repanda</i> Wahlenb. | E | | P |
| <i>P. vesiculosa</i> Bull. | E | | P |
| <i>Phaeoclavulina flaccida</i> (Fr.) Giachini | | | P |
| <i>Phaeocollybia columbiana</i> Singer | | | P |
| <i>P. fallax</i> A.H. Sm. | E | | |
| <i>P. jemyae</i> (P. Karst.) Romagn. | | | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>P. similis</i> (Bres.) Singer | | | P |
| <i>Phaeogalera stagnina</i> (Fr.) Pegler & T.W.K. Young | | | P |
| <i>Phaeolepiota aurea</i> (Matt.) Maire | E | Antitumor (Dai et al. 2009) | P |
| <i>Phaeolus schweinitzii</i> (Fr.) Pat. | | Antitumor (Dai et al. 2009); antimicrobial, antioxidant (Smolskaitė et al. 2015) | |
| <i>Phaeotremella foliacea</i> (Pers.) Wedin et al. | E | Treating gynecopathy (Dai et al. 2009) | |
| <i>P. frondosa</i> (Fr.) Spirin & V. Malysheva | E | | |
| <i>Phallus costatus</i> (Penz.) Lloyd | E | | |
| <i>P. fragrans</i> M. Zang | E | | |
| <i>P. fuscoechinovolvatus</i> T.H. Li et al. | E | | |
| <i>P. impudicus</i> L. | E | Anaesthetic, promoting blood circulation, treating rheumatism, clearing the lung (Dai et al. 2009) | |
| <i>P. luteus</i> (Liou & L. Hwang) T. Kasuya | E | | |
| <i>P. rubicundus</i> (Bosc) Fr. | | Detumescence (Dai et al. 2009) | P |
| <i>P. tenuis</i> (E. Fisch.) Kuntze | | Relieving fever, detoxification, detumescence (Dai et al. 2009) | P |
| <i>Phellinopsis conchata</i> (Pers.) Y.C. Dai | | Promoting blood circulation, detoxification, improving immunity, antitumor (Dai et al. 2009) | |
| <i>Phellinus ellipsoideus</i> (B.K. Cui & Y.C. Dai) B.K. Cui et al. | | Antioxidant, antitumor (Zan et al. 2012, 2015) | |
| <i>P. ignarius</i> (L.) Quéf. | | Haemostasis, antitumor (Dai et al. 2009; Li et al. 2015e; Lei et al. 2015); antibacteria, antioxidant, anti-fatigue, anti-inflammatory, immunomodulation, hepatoprotection, lowering blood glucose (Zhang et al. 2014a; Shi et al. 2017; Liu et al. 2018d) | |
| <i>P. lundellii</i> Niemelä | | Antitumor, improving immunity (Dai et al. 2009) | |
| <i>P. monticola</i> L.W. Zhou & Y.C. Dai | | Haemostasis, antitumor (Zhou et al. 2016b) | |
| <i>P. mori</i> Y.C. Dai & B.K. Cui | | Antioxidant (Cao et al. 2013) | |
| <i>P. orientoasiaticus</i> L.W. Zhou & Y.C. Dai | | Antitumor, improving immunity (Zhou et al. 2016b) | |
| <i>P. padicola</i> L.W. Zhou & Y.C. Dai | | Antitumor, haemostasis (Zhou et al. 2016b) | |
| <i>P. parmastoi</i> L.W. Zhou & Y.C. Dai | | antitumor, improving immunity (Zhou et al. 2016b) | |
| <i>P. piceicola</i> B.K. Cui & Y.C. Dai | | Antitumor, haemostasis (Cui and Dai 2012) | |
| <i>P. tremulae</i> (Bondartsev) Bondartsev & P.N. Borisov | | Antitumor, improving immunity (Dai et al. 2009) | |
| <i>Phellodon niger</i> (Fr.) P. Karst. | E | | |
| <i>P. tomentosus</i> (L.) Banker | E | | |
| <i>Phellorinia inquinans</i> Berk. | | Haemostasis, detumescence (Dai et al. 2009) | |
| <i>Phlebia tremellosa</i> (Schrad.) Nakasone & Burds. | | Antitumor, antibacteria (Dai et al. 2009) | |
| <i>Phlebopus marginatus</i> Watling & N.M. Greg. | E | | |
| <i>Pholiota adiposa</i> (Batsch) P. Kumm. | E | Antibacteria, improving immunity (Dai et al. 2009); antioxidant, antiproliferation, antitumor (Hu et al. 2012; Wang et al. 2014a; Zhou et al. 2017a) | |
| <i>P. alnicola</i> (Fr.) Singer | E | | P |
| <i>P. aurivella</i> (Batsch) P. Kumm. | E | Antimicrobial (Dyakov et al. 2011; Tang et al. 2014) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>P. dinghuensis</i> Z.S. Bi | E | Antibacteria, antioxidant, antitumor, immunomodulation (Gan et al. 2011; Li et al. 2013d, e) | |
| <i>P. flammans</i> (Batsch) P. Kumm. | E | Antitumor (Dai et al. 2009) | P |
| <i>P. gummosa</i> (Lasch) Singer | E | | |
| <i>P. highlandensis</i> (Peck) Quadr. & Lunghini | E | Antitumor (Dai et al. 2009) | P |
| <i>P. johnsoniana</i> (Peck) G.F. Atk. | E | | |
| <i>P. lenta</i> (Pers.) Singer | E | Antitumor (Dai et al. 2009) | |
| <i>P. lubrica</i> (Pers.) Singer | E | Antitumor (Dai et al. 2009) | P |
| <i>P. microspora</i> (Berk.) Sacc. | E | Antibacteria, antitumor (Dai et al. 2009); antioxidant (Wang et al. 2014e) | |
| <i>P. piceina</i> (Murrill) A.H. Sm. & Hesler | | | P |
| <i>P. populnea</i> (Pers.) Kuyper & Tjall.-Beuk. | E | Antitumor (Dai et al. 2009) | |
| <i>P. pseudosiparia</i> A.H. Sm. & Hesler | E | | |
| <i>P. pudica</i> (Bull.) Gillet | E | | P |
| <i>P. spumosa</i> (Fr.) Singer | E | Antitumor (Dai et al. 2009) | |
| <i>P. squarrosa</i> (Vahl) P. Kumm. | E | Antitumor, immunomodulation (Wang and Wang 2010) | P |
| <i>P. squarrosoides</i> (Peck) Sacc. | E | | P |
| <i>P. terrestris</i> Overh. | E | Antitumor (Dai et al. 2009) | P |
| <i>P. terrigena</i> (Fr.) P. Karst. | E | | |
| <i>P. virescens</i> T. Bau & E.J. Tian | E | | |
| <i>Phylloporia loniceriae</i> W.M. Qin et al. | | Antitumor (Dai et al. 2009) | |
| <i>Phylloporus bellus</i> (Masse) Corner | E | | P |
| <i>P. brunneiceps</i> N.K. Zeng et al. | E | | |
| <i>P. imbricatus</i> N.K. Zeng et al. | E | | |
| <i>P. incarnatus</i> Corner | E | | |
| <i>P. luxiensis</i> M. Zang | E | | |
| <i>P. orientalis</i> var. <i>brevisporus</i> Corner | E | | |
| <i>P. pachycystidiatus</i> N.K. Zeng et al. | E | | |
| <i>P. rubeolus</i> N.K. Zeng et al. | E | | |
| <i>P. rubrosquamosus</i> N.K. Zeng et al. | E | | |
| <i>P. scabrosus</i> M. Zang | E | | |
| <i>P. yunnanensis</i> N.K. Zeng et al. | E | | |
| <i>Phyllotopsis nidulans</i> (Pers.) Singer | E | | |
| <i>P. rhodophylla</i> (Bres.) Singer | E | | |
| <i>Picipes submelanopus</i> (H.J. Xue & L.W. Zhou) J.L. Zhou & B.K. Cui | | Antitumor (Dai et al. 2009) | |
| <i>Pisolithus arhizus</i> (Scop.) Rauschert | | Antifungus (Dai et al. 2009); antioxidant (Reis et al. 2011a) | |
| <i>P. tinctorius</i> (Pers.) Coker & Couch | | Detumescence, haemostasis (Dai et al. 2009) | |
| <i>Pleurocybella porrigens</i> (Pers.) Singer | E | | P |
| <i>Pleurotellus albellus</i> (Pat.) Pegler | E | | |
| <i>Pleurotus abieticola</i> R.H. Petersen & K.W. Hughes | E | | |
| <i>P. anserinus</i> Sacc. | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>P. calyptratus</i> (Lindblad ex Fr.) Sacc. | E | | |
| <i>P. citrinopileatus</i> Singer | E | Improving immunity, lowering serum lipids, antitumor (Dai et al. 2009; Chen et al. 2010a); antidiabetic activity, antimicrobial, antioxidant, anti-inflammation (Chen et al. 2011b; Meng et al. 2012; Li et al. 2013c; Rushita et al. 2013) | |
| <i>P. cornucopiae</i> (Paulet) Rolland | E | Antitumor (Dai et al. 2009; Wang et al. 2013a, b, c; Wu et al. 2014b); antioxidant, hepatoprotection, HIV-1 reverse transcriptase inhibitor (Wang et al. 2013a, b, c; Kumar et al. 2014; Wu et al. 2014b; Zhang et al. 2014b) | |
| <i>P. cystidiosus</i> O.K. Mill. | E | Anticancer, antifungus, antioxidant, antiproliferation, HIV-1 reverse transcriptase inhibitor, hypoglycemic activity (Menikpurage et al. 2009, 2012; Wang and Ning 2011; Zheng et al. 2015b) | |
| <i>P. djamor</i> (Rumph. ex Fr.) Boedijn | E | Antioxidant, antitumor, hepatoprotection (Saha et al. 2012; Borges et al. 2014; Zhang et al. 2016b) | |
| <i>P. dryinus</i> (Pers.) P. Kumm. | E | Treating emphysema (Dai et al. 2009) | |
| <i>P. eryngii</i> (DC.) Quél. | E | Antioxidant, antitumor, hepatoprotection, hypolipidemic activities, immunomodulation (Chen et al. 2012b; Wang et al. 2012b; Mishra et al. 2013; Ma et al. 2014a; Fan et al. 2017; Xue et al. 2018) | |
| <i>P. eryngii</i> var. <i>ferulae</i> (Lanzi) Sacc. | E | Treating gastropathy (Dai et al. 2009); antimicrobial, antihyperlipidemic and antihyperglycemic activities, antioxidant, hepatoprotection (Akyuz and Kirbag 2009; Alam et al. 2011; Wang et al. 2014b; Li et al. 2016b; Du et al. 2017) | |
| <i>P. flabellatus</i> Sacc. | E | Antimicrobial (Rai et al. 2013) | |
| <i>P. giganteus</i> (Berk.) Karun. & K.D. Hyde | E | Antifungus, antioxidant (Phan et al. 2013b, 2014) | |
| <i>P. limpidus</i> (Fr.) P. Karst. | E | | |
| <i>P. ostreatus</i> (Jacq.) P. Kumm. | E | Treating lumbago and skelalgia, limb numbness, improving the system of meridians and collaterals, antitumor (Dai et al. 2009; Tong et al. 2009); antioxidant (Chirinang and Intarapichet 2009; Ma et al. 2017b) | |
| <i>P. placentodes</i> (Berk.) Sacc. | E | | |
| <i>P. pulmonarius</i> (Fr.) Quél. | E | Antitumor (Dai et al. 2009; Lavi et al. 2010b; Xu et al. 2012; Dong and Wang 2017); anticholinesterase, anticoagulant, antidiabetic activity, antimicrobial, antinociception, antioxidant, anti-inflammation, immunomodulation (Lavi et al. 2010a; Adebayo et al. 2012; Baggio et al. 2012; Wahab et al. 2014; Nguyen et al. 2016; Dong and Wang 2017) | |
| <i>P. sapidus</i> Sacc. | E | Antioxidant (Guo et al. 2012) | |
| <i>P. spodoleucus</i> (Fr.) Quél. | E | Antitumor (Dai et al. 2009); antioxidant, hepatoprotection, lowering serum lipids (Deng et al. 2015) | |
| <i>P. tuoliensis</i> (C.J. Mou) M.R. Zhao & Jin X. Zhang | E | Antihyperlipidemic activity, antioxidant (Xu et al. 2017b) | |
| <i>Pluteus atromarginatus</i> (Konrad) Kühner | E | | |
| <i>P. cervinus</i> (Schaeff.) P. Kumm. | E | | |
| <i>P. leoninus</i> (Schaeff.) P. Kumm. | E | | |
| <i>P. longistriatus</i> (Peck) Peck | E | | |
| <i>P. pellitus</i> (Pers.) P. Kumm. | E | | |
| <i>P. petasatus</i> (Fr.) Gillet | E | | |
| <i>P. salicinus</i> (Pers.) P. Kumm. | E | | P |
| <i>P. subcervinus</i> (Berk. & Broome) Sacc. | E | | |
| <i>P. umbrosus</i> (Pers.) P. Kumm. | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>Podaxis pistillaris</i> (L.) Fr. | E | Disinfecting, clearing the lung, relieving sore throat, detoxification, haemostasis (Dai et al. 2009) | |
| <i>Podostroma grossum</i> (Berk.) Boedijn | E | | |
| <i>P. yunnanense</i> M. Zang | | Haemostasis (Dai et al. 2009) | |
| <i>Polyozellus multiplex</i> (Underw.) Murrill | E | Antivirus, anti-angiogenesis (Lee et al. 2013; Nagasawa et al. 2014) | |
| <i>Polyporus arcularius</i> (Batsch) Fr. | | Antitumor (Dai et al. 2009); antimicrobial (Srivastava and Sharma 2011) | |
| <i>P. elegans</i> Bull. | | Tonifying meridians and collaterals (Dai et al. 2009) | |
| <i>P. mori</i> (Pollini) Fr. | | Antitumor (Dai et al. 2009) | |
| <i>P. squamosus</i> (Huds.) Fr. | | Improving immunity, antitumor (Dai et al. 2009); antimicrobial, antioxidant (Fernandes et al. 2016) | |
| <i>P. umbellatus</i> (Pers.) Fr. | E | Inducing diuresis, treating hepatopathy, antitumor (Dai et al. 2009; Zhao et al. 2010b; Zhang et al. 2015a; Li and Yu 2018); antimicrobial, immunostimulant, prevention of early renal injury, reducing hepatitis B infection (Li and Xu 2011; Zeng et al. 2011; Zhao et al. 2011b; Tao et al. 2013; Sun and Zhou 2014; Tan et al. 2018) | |
| <i>P. varius</i> (Pers.) Fr. | | Dispelling wind-evil, tonifying meridians and collaterals (Dai et al. 2009) | |
| <i>Porodaedalea alpicola</i> S.J. Dai, et al. | | Antitumor, improving immunity (Wu et al. 2019) | |
| <i>P. chinensis</i> S.J. Dai & F. Wu | | Antitumor, improving immunity (Dai et al. 2017) | |
| <i>P. himalayensis</i> (Y.C. Dai) Y.C. Dai | | Antitumor, improving immunity (Dai et al. 2009) | |
| <i>P. laricis</i> (Jacz. ex Pilát) Niemelä | | Antitumor, improving immunity (Dai et al. 2009) | |
| <i>P. microsperma</i> S.J. Dai et al. | | (Wu et al. 2019) | |
| <i>P. yamanoi</i> (Imazeki) Y.C. Dai | | Antitumor, improving immunity (Dai et al. 2009) | |
| <i>P. yunnanensis</i> S.J. Dai et al. | | (Wu et al. 2019) | |
| <i>Porphyrellus porphyrosporus</i> (Fr. & Hök) E.-J. Gilbert | E | | |
| <i>Porpolomopsis calyptriformis</i> (Berk.) Bresinsky | E | | P |
| <i>Postia lactea</i> (Fr.) P. Karst. | | Antitumor (Dai et al. 2009) | |
| <i>Protostropharia semiglobata</i> (Batsch) Redhead et al. | E | | P |
| <i>Psathyrella candolleana</i> (Fr.) Maire | | Antibacteria (Liktor-Busa et al. 2016) | P |
| <i>P. castaneifolia</i> (Murrill) A.H. Sm. | | | P |
| <i>P. gracilis</i> (Fr.) Quél. | | | P |
| <i>P. kauffmanii</i> A.H. Sm. | | | P |
| <i>Pseudoarmillariella ectypoides</i> (Peck) Singer | | | P |
| <i>Pseudoclitocybe cyathiformis</i> (Bull.) Singer | E | Antitumor (Dai et al. 2009); antifungus (Güler et al. 2012) | |
| <i>P. expallens</i> (Pers.) M.M. Moser | E | | |
| <i>Pseudocolus fusiformis</i> (E. Fisch.) Lloyd | E | | |
| <i>P. schellenbergiae</i> (Sumst.) M.M. Johnson | E | | |
| <i>Pseudocraterellus undulatus</i> (Pers.) Rauschert | E | | |
| <i>Pseudohydnum gelatinosum</i> (Scop.) P. Karst. | E | Antitumor (Dai et al. 2009); antioxidant (Wang 2012) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>Pseudomerulius aureus</i> (Fr.) Jülich | | Antitumor (Dai et al. 2009) | |
| <i>P. curtisii</i> (Berk.) Redhead & Ginns | | Antibacteria, antioxidant (Tamrakar et al. 2016, 2017) | P |
| <i>Psilocybe argentipes</i> K. Yokoy. | | | P |
| <i>P. baecystis</i> Singer & A.H. Sm. | | | P |
| <i>P. coprophila</i> (Bull.) P. Kumm. | | | P |
| <i>P. coronilla</i> (Bull.) Noordel. | | | P |
| <i>P. cubensis</i> (Earle) Singer | | | P |
| <i>P. cyanescens</i> Wakef. | | | P |
| <i>P. fasciata</i> Hongo | | | P |
| <i>P. mexicana</i> R. Heim | | | P |
| <i>P. mongolica</i> Sarentoya & T. Bau | | | P |
| <i>P. samuiensis</i> Guzmán et al. | | | P |
| <i>P. semilanceata</i> (Fr.) P. Kumm. | | | P |
| <i>P. subcaerulipes</i> Hongo | | | P |
| <i>P. taiwanensis</i> Zhu L. Yang & Guzmán | | | P |
| <i>P. venenata</i> (S. Imai) Imazeki & Hongo | | | P |
| <i>P. wayanadensis</i> K.A. Thomas et al. | | | P |
| <i>P. yungensis</i> Singer & A.H. Sm. | | | P |
| <i>Pulveroboletus icterinus</i> (Pat. & C.F. Baker) Watling | | | P |
| <i>P. ravenelii</i> (Berk. & M.A. Curtis) Murrill | | Treating lumbago and skelalgia, limb numbness, improving the system of meridians and collaterals (Dai et al. 2009); anticancer (Kim et al. 2017) | P |
| <i>Pycnoporus cinnabarinus</i> (Jacq.) P. Karst. | | Relieving fever, anti-inflammatory, antitumor (Dai et al. 2009) | |
| <i>P. sanguineus</i> (L.) Murrill | | Antibacteria, antitumor, haemostasis, treating rheumatism, relieving itching (Dai et al. 2009); antioxidant (Cao et al. 2014) | |
| <i>Pyrrhoderma adamantinum</i> (Berk.) Imazeki | | Treating gastropathy (Dai et al. 2009) | |
| <i>P. lamaëense</i> (Murrill) L.W. Zhou & Y.C. Dai | | Antitumor (Dai et al. 2009) | |
| <i>Ramaria abietina</i> (Pers.) Quél. | E | | |
| <i>R. apiculata</i> (Fr.) Donk | E | Antitumor (Dai et al. 2009) | |
| <i>R. asiatica</i> (R.H. Petersen & M. Zang) R.H. Petersen | E | | |
| <i>R. aurea</i> (Schaeff.) Quél. | E | Antitumor (Dai et al. 2009) | P |
| <i>R. botrytis</i> (Pers.) Bourdot | E | Antibacteria, antioxidant, antitumor (Giri et al. 2012; Li 2017; Zhou et al. 2017b) | |
| <i>R. botrytoides</i> (Peck) Corner | E | Antioxidant (Dong et al. 2017; Sheng et al. 2018) | |
| <i>R. botrytoides</i> var. <i>microspora</i> R.H. Petersen & M. Zang | E | | |
| <i>R. bourdotiana</i> Maire | E | | |
| <i>R. brunneipes</i> R.H. Petersen & M. Zang | E | | |
| <i>R. campestris</i> (K. Yokoy. & Sagara) R.H. Petersen | E | | |
| <i>R. cedretorum</i> (Maire) Malençon | E | | |
| <i>R. cyanocephala</i> (Berk. & M.A. Curtis) Corner | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>R. distinctissima</i> R.H. Petersen & M. Zang | E | | |
| <i>R. ephemeroforma</i> R.H. Petersen & M. Zang | E | | |
| <i>R. eryuanensis</i> R.H. Petersen & M. Zang | E | | |
| <i>R. eumorpha</i> (P. Karst.) Corner | E | | |
| <i>R. femica</i> (P. Karst.) Ricken | E | | |
| <i>R. flava</i> (Schaeff.) Quéf. | E | Antitumor (Dai et al. 2009; Sadi et al. 2016); antibacteria, antioxidant (Sadi et al. 2016) | P |
| <i>R. flavobrunnescens</i> (G.F. Atk.) Corner | E | | |
| <i>R. formosa</i> (Pers.) Quéf. | E | Antitumor (Dai et al. 2009); neutrophil elastase inhibitor (Kim et al. 2015) | P |
| <i>R. fumigata</i> (Peck) Corner | | | P |
| <i>R. fuscobrunnea</i> Corner | E | | |
| <i>R. gelatinosa</i> var. <i>oregonensis</i> Marr & D.E. Stuntz | | | P |
| <i>R. hemirubella</i> R.H. Petersen & M. Zang | E | Antitumor (Dai et al. 2009) | |
| <i>R. hiliaris</i> R.H. Petersen & M. Zang | E | | |
| <i>R. holorubella</i> (G.F. Atk.) Corner | E | | |
| <i>R. indoyunnaniana</i> R.H. Petersen & M. Zang | E | | |
| <i>R. laeviformosoides</i> R.H. Petersen & M. Zang | E | | |
| <i>R. linearioides</i> R.H. Petersen & M. Zang | E | | |
| <i>R. linearis</i> R.H. Petersen & M. Zang | E | | |
| <i>R. longicaulis</i> (Peck) Corner | E | | |
| <i>R. lutea</i> Schild | E | | |
| <i>R. luteoeruginea</i> P. Zhang & Zhu L. Yang | E | | |
| <i>R. mairei</i> Donk | E | | P |
| <i>R. nanispora</i> R.H. Petersen & M. Zang | E | | |
| <i>R. neoformosa</i> R.H. Petersen | | | P |
| <i>R. neoformosa</i> var. <i>sinensis</i> R.H. Petersen & M. Zang | E | | |
| <i>R. obtusissima</i> (Peck) Corner | E | | |
| <i>R. pallidolilacina</i> P. Zhang & Z.W. Ge | E | | |
| <i>R. rubriattenuipes</i> R.H. Petersen & M. Zang | E | | |
| <i>R. rubricarnata</i> var. <i>laeta</i> R.H. Petersen | E | | |
| <i>R. rufescens</i> (Schaeff.) Corner | E | | P |
| <i>R. sanguinipes</i> R.H. Petersen & M. Zang | E | | |
| <i>R. secunda</i> (Berk.) Corner | E | | |
| <i>R. sinoconjunctipes</i> R.H. Petersen & M. Zang | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>R. stricta</i> (Pers.) Quél. | E | | |
| <i>R. subaurantiaca</i> Corner | E | | |
| <i>R. subbotrytis</i> (Coker) Corner | E | | |
| <i>R. zebrispota</i> R.H. Petersen | E | | |
| <i>Ramariopsis kunzei</i> (Fr.) Corner | E | | |
| <i>Retiboletus fuscus</i> (Hongo) N.K. Zeng & Zhu L. Yang | E | | |
| <i>R. kauffmanii</i> (Lohwag) N.K. Zeng & Zhu L. Yang | E | Antioxidant (Wang et al. 2017e) | |
| <i>R. nigerrimus</i> (R. Heim) Manfr. Binder & Bresinsky | | | P |
| <i>R. pseudogriseus</i> N.K. Zeng & Zhu L. Yang | E | | |
| <i>R. sinensis</i> N.K. Zeng & Zhu L. Yang | E | | |
| <i>R. zhangfeii</i> N.K. Zeng & Zhu L. Yang | E | | |
| <i>Rhizina undulata</i> Fr. | | | P |
| <i>Rhizopogon jiyaozi</i> Lin Li & Shu H. Li | E | | |
| <i>R. luteolus</i> Fr. | E | Antibacteria, anticancer, antioxidant (Sadi et al. 2015) | |
| <i>R. nigrescens</i> Coker & Couch | E | | |
| <i>R. piceus</i> Berk. & M.A. Curtis | E | Haemostasis (Dai et al. 2009) | |
| <i>R. roseolus</i> (Corda) Th. Fr. | E | Antitumor (Dai et al. 2009); antioxidant (Kalyoncu et al. 2010) | |
| <i>R. shanxiensis</i> B. Liu | E | | |
| <i>R. superiorenensis</i> A.H. Sm. | E | | |
| <i>Rhodocollybia butyracea</i> (Bull.) Lennox | E | | |
| <i>R. maculata</i> (Alb. & Schwein.) Singer | E | | |
| <i>Rhodofomes roseus</i> (Alb. & Schwein.) Vlasák | | Antitumor (Dai et al. 2009); antibacteria (Popova et al. 2009) | |
| <i>Rhodophyllus ater</i> Hongo | | Antitumor (Dai et al. 2009) | |
| <i>Rhodotus palmatus</i> (Bull.) Maire | E | Antioxidant (Heleno et al. 2012) | |
| <i>Rigidoporus ulmarius</i> (Sowerby) Imazeki | | Antitumor (Dai et al. 2009) | |
| <i>Ripartitella brasiliensis</i> (Speg.) Singer | E | | |
| <i>Rubroboletus esculentus</i> Kuan Zhao et al. | E | | |
| <i>R. latisporus</i> Kuan Zhao & Zhu L. Yang | E | | P |
| <i>R. satanas</i> (Lenz) Kuan Zhao & Zhu L. Yang | | Antitumor (Dai et al. 2009; Morel et al. 2018); antioxidant (Morel et al. 2018) | P |
| <i>R. sinicus</i> (W.F. Chiu) Kuan Zhao & Zhu L. Yang | E | | P |
| <i>Rugiboletus brunneiporus</i> G. Wu & Zhu L. Yang | E | | |
| <i>R. extremiorientalis</i> (Lj.N. Vassiljeva) G. Wu & Zhu L. Yang | E | | |
| <i>Russula abietina</i> Peck | E | | |
| <i>R. adusta</i> (Pers.) Fr. | E | Antitumor (Dai et al. 2009) | |
| <i>R. aeruginea</i> Lindblad ex Fr. | E | | |
| <i>R. albida</i> Peck | E | | |
| <i>R. albonigra</i> (Krombh.) Fr. | E | Antimicrobial, antioxidant, immunostimulant (Giri et al. 2012; Nandi et al. 2014) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>R. alutacea</i> (Fr.) Fr. | E | Tonifying meridians and collaterals, antitumor (Dai et al. 2009); antioxidant (Wang et al. 2017a) | P |
| <i>R. amoena</i> Quél. | E | | |
| <i>R. anatina</i> Romagn. | E | | |
| <i>R. atroaeruginea</i> G.J. Li et al. | E | | |
| <i>R. atropurpurea</i> (Krombh.) Britzelm. | E | | |
| <i>R. aurea</i> Pers. | E | Antitumor (Dai et al. 2009); antioxidant (Leal et al. 2013) | |
| <i>R. azurea</i> Bres. | E | | |
| <i>R. brunneoviolacea</i> Crawshay | E | | |
| <i>R. caerulea</i> Fr. | E | | |
| <i>R. chloroides</i> (Krombh.) Bres. | E | | |
| <i>R. compacta</i> Frost | E | | |
| <i>R. cremeoavellanea</i> Singer | E | | |
| <i>R. crustosa</i> Peck | E | Antitumor (Dai et al. 2009) | |
| <i>R. cyanoxantha</i> (Schaeff.) Fr. | E | Antitumor (Dai et al. 2009); antimicrobial, antioxidant (Kosanić et al. 2013) | |
| <i>R. decolorans</i> (Fr.) Fr. | E | | |
| <i>R. delica</i> Fr. | E | Antitumor (Dai et al. 2009; Zhao et al. 2010a); antimicrobial, antioxidant, HIV-1 reverse transcriptase inhibitor (Yaltirak et al. 2009; Zhao et al. 2010a; Giri et al. 2012) | |
| <i>R. densifolia</i> Secr. ex Gillet | E | Treating lumbago and skelalgia, deadlimb, antitumor (Dai et al. 2009) | |
| <i>R. depallens</i> Fr. | E | | |
| <i>R. emetica</i> (Schaeff.) Pers. | E | Antitumor (Dai et al. 2009); antioxidant, anti-tyrosinase, hyperglycemic inhibitor (Kaewnarin et al. 2016) | P |
| <i>R. exalbicans</i> (Pers.) Melzer & Zvára | E | | |
| <i>R. faginea</i> Romagn. | E | | |
| <i>R. farinipes</i> Romell | E | Anti-aging (Wei et al. 2017a) | P |
| <i>R. fellea</i> (Fr.) Fr. | E | Anti-inflammation (O'Callaghan et al. 2015) | P |
| <i>R. flavida</i> Frost | | | P |
| <i>R. foetens</i> Pers. | | Treating lumbago and skelalgia, limb numbness, antitumor (Dai et al. 2009) | P |
| <i>R. fragilis</i> Fr. | | Antibacteria, antioxidant (Nowacka et al. 2015) | P |
| <i>R. furcata</i> Pers. | E | | |
| <i>R. galochroa</i> (Fr.) Fr. | E | | |
| <i>R. granulata</i> Peck | E | | |
| <i>R. grata</i> Britzelm. | E | Antitumor (Dai et al. 2009) | P |
| <i>R. grisea</i> Fr. | E | | |
| <i>R. griseocarnosa</i> X.H. Wang et al. | E | Treating anemia, antitumor (Dai et al. 2009; Liu et al. 2018m); antioxidant (Chen et al. 2010b) | |
| <i>R. heterophylla</i> (Fr.) Fr. | E | | |
| <i>R. incarnata</i> Quél. | E | | |
| <i>R. insignis</i> Quél. | | | P |
| <i>R. integra</i> (L.) Fr. | E | Treating lumbago and skelalgia, limb numbness (Dai et al. 2009) | |
| <i>R. japonica</i> Hongo | | | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>R. laurocerasi</i> Melzer | E | Antimicrobial, antioxidant (Giri et al. 2012; Khatua et al. 2013) | P |
| <i>R. lepidicolor</i> Romagn. | E | | |
| <i>R. lilacea</i> Quéf. | E | Antitumor (Dai et al. 2009) | |
| <i>R. livescens</i> (Batsch) Bataille | E | | |
| <i>R. lutea</i> (Huds.) Gray | E | | |
| <i>R. luteotacta</i> Rea | E | Antioxidant (Butkhop et al. 2018) | P |
| <i>R. mariae</i> Peck | E | | |
| <i>R. melliolens</i> Quéf. | E | | |
| <i>R. metachroa</i> Hongo | | | P |
| <i>R. mollis</i> Quéf. | E | | |
| <i>R. mustelina</i> Fr. | E | | |
| <i>R. nauseosa</i> (Pers.) Fr. | E | | |
| <i>R. nigricans</i> Fr. | E | Treating lumbago and skelalgia, limb numbness, antitumor (Dai et al. 2009) | |
| <i>R. nigrovirens</i> Q. Zhao et al. | E | | |
| <i>R. nitida</i> (Pers.) Fr. | E | | |
| <i>R. ochroleuca</i> Fr. | E | | |
| <i>R. olivacea</i> Pers. | E | | |
| <i>R. olivascens</i> Fr. | E | | |
| <i>R. paludosa</i> Britzelm. | E | | |
| <i>R. parazurea</i> Jul. Schäff. | E | | |
| <i>R. pectinatoides</i> Peck | E | | |
| <i>R. pseudodelica</i> J.E. Lange | E | Antitumor (Dai et al. 2009) | |
| <i>R. pseudointegra</i> Arnould & Goris | E | | |
| <i>R. pseudoromellii</i> J. Blum ex Bon | E | | |
| <i>R. puellaris</i> Fr. | E | | |
| <i>R. purpurina</i> Quéf. & Schulzer | E | | |
| <i>R. queletii</i> Fr. | | Antibacteria (Dai et al. 2009) | P |
| <i>R. risigallina</i> (Batsch) Sacc. | E | | |
| <i>R. romellii</i> Maire | E | | |
| <i>R. rosea</i> Pers. | E | Antitumor (Dai et al. 2009) | |
| <i>R. roseipes</i> Secr. ex Bres. | E | | |
| <i>R. rubescens</i> Beardslee | E | Antitumor (Dai et al. 2009) | |
| <i>R. rubra</i> (Lam.) Fr. | E | | |
| <i>R. sanguinaria</i> (Schumach.) Rauschert | E | | |
| <i>R. sanguinea</i> Fr. | | Antitumor (Dai et al. 2009) | |
| <i>R. sardonias</i> Fr. | E | | |
| <i>R. senecis</i> S. Imai | | Antitumor (Dai et al. 2009); antioxidant, immunostimulant (Khatua and Acharya 2017) | P |
| <i>R. sororia</i> (Fr.) Romell | | Antitumor (Dai et al. 2009) | |
| <i>R. subdepallens</i> Peck | E | | |
| <i>R. subfoetens</i> W.G. Sm. | | | P |
| <i>R. subnigricans</i> Hongo | | Antitumor (Dai et al. 2009; He et al. 2011) | P |
| <i>R. tenuiceps</i> Kauffman | | | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>R. turci</i> Bres. | E | | |
| <i>R. velenovskyi</i> Melzer & Zvára | E | | |
| <i>R. vesca</i> Fr. | E | Promoting digestion, antitumor (Dai et al. 2009); antimicrobial, antioxidant (Heleno et al. 2010; Nwachukwu and Uzoeto 2010) | |
| <i>R. violacea</i> Quéf. | E | | |
| <i>R. violeipes</i> Quéf. | E | | |
| <i>R. virescens</i> (Schaeff.) Fr. | E | Improving eyesight, antitumor (Dai et al. 2009; Sun et al. 2009); antioxidant (Leal et al. 2013; Hasnat et al. 2014) | |
| <i>R. viridirubrolimbata</i> J.Z. Ying | E | | |
| <i>Saccharomyces cerevisiae</i> (Desm.) Meyen | | Improving digestion (Dai et al. 2009) | |
| <i>Saccobolus violascens</i> Boud. | | Relieving fever (Dai et al. 2009) | |
| <i>Sanghuangporus alpinus</i> (Y.C. Dai & X.M. Tian) L.W. Zhou & Y.C. Dai | | Antitumor, lowering serum lipids, treating pneumonia (Tian et al. 2013; Zhou et al. 2016a) | |
| <i>S. baumii</i> (Pilat) L.W. Zhou & Y.C. Dai | | Antitumor, lowering serum lipids, treating pneumonia (Dai et al. 2009; Xue et al. 2011; Shao et al. 2014; Zhang et al. 2015c, 2016a); ameliorating endothelial and vascular dysfunction, antioxidant, antiproliferation, anti-aging, anti-inflammation, immunostimulant (Xue et al. 2011; Cao et al. 2013; Wu et al. 2013; Shao et al. 2014; Sun et al. 2014; Wang et al. 2011a, 2015e; Lim et al. 2016; Lin et al. 2017b) | |
| <i>S. lonicericola</i> (Parmasto) L.W. Zhou & Y.C. Dai | | Antitumor, improving immunity (Dai et al. 2009); antioxidant (Yu et al. 2012, 2014) | |
| <i>S. quercicola</i> Lin Zhu & B.K. Cui | | Antitumor, lowering serum lipids, treating pneumonia (Zhu et al. 2017b) | |
| <i>S. sanghuang</i> (Sheng H. Wu et al.) Sheng H. Wu et al. | | Antimicrobial, antioxidant, antitumor, anti-inflammation, antiproliferation (Tian et al. 2015; Lin et al. 2017a, b; Liu et al. 2017e; Zheng et al. 2017; Wang et al. 2018d) | |
| <i>S. vaninii</i> (Ljub.) L.W. Zhou & Y.C. Dai | | Antioxidant, antiproliferation, anti-inflammation (Cheng et al. 2011; Cao et al. 2013; Hu et al. 2014a; Zhang et al. 2015e; Lin et al. 2017b) | |
| <i>S. weigela</i> (T. Hatt. & Sheng H. Wu) Sheng H. Wu et al. | | Antitumor, lowering serum lipids, treating pneumonia (Wu et al. 2012b; Zhou et al. 2016a) | |
| <i>S. zonatus</i> (Y.C. Dai & X.M. Tian) L.W. Zhou & Y.C. Dai | | Antitumor, lowering serum lipids, treating pneumonia (Tian et al. 2013; Zhou et al. 2016a) | |
| <i>Sarcodon imbricatus</i> (L.) P. Karst. | E | Lowering cholesterol (Dai et al. 2009); antioxidant, antitumor, immunoenhancement (Chen et al. 2011a, 2013; Sulikowska-Ziada et al. 2012; Wang et al. 2014d; Ding et al. 2015a; Xu et al. 2017c) | P |
| <i>S. leucopus</i> (Pers.) Maas Geest. & Nannf. | E | Antioxidant, α -glucosidase inhibitor (Ma et al. 2014c) | |
| <i>S. scabrosus</i> (Fr.) P. Karst. | E | Antibacteria (Dai et al. 2009); antimicrobial, antitumor (Dong et al. 2009; Ma et al. 2010a) | |
| <i>S. violaceus</i> Quéf. | E | | |
| <i>Sarcomyxa edulis</i> (Y.C. Dai et al.) T. Saito et al. | | Improving immunity, antitumor (Dai et al. 2009); antibacteria (Tamrakar et al. 2017) | |
| <i>S. serotina</i> (Pers.) P. Karst. | E | | |
| <i>Sarcoscypha coccinea</i> (Gray) Boud. | | | P |
| <i>Sarcosoma javanicum</i> Rehm | E | | |
| <i>Sarcosphaera coronaria</i> (Jacq.) J. Schröt. | E | Antioxidant (Sevindik et al. 2018) | P |
| <i>Schizophyllum commune</i> Fr. | E | Treating neurasthenia, anti-inflammatory, antitumor (Dai et al. 2009; Ma et al. 2017a); antimicrobial, antioxidant, anti-aging (Klaus et al. 2011; Zhao et al. 2015c; Ma et al. 2017a) | |
| <i>Schizostoma bailingmiaoense</i> B. Liu et al. | | Haemostasis (Dai et al. 2009) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>Scleroderma areolatum</i> Ehrenb. | E | Anti-inflammation, haemostasis (Dai et al. 2009); antioxidant (He et al. 2015) | P |
| <i>S. aurantiacum</i> Pers. ex Sacc. | E | | |
| <i>S. aurantium</i> (L.) Pers. | | | P |
| <i>S. bovista</i> Fr. | E | Anti-inflammation, haemostasis (Dai et al. 2009) | |
| <i>S. cepa</i> Pers. | | Detoxification, detumescence, haemostasis (Dai et al. 2009) | P |
| <i>S. citrinum</i> Pers. | | Anti-inflammation (Dai et al. 2009) | P |
| <i>S. flavidum</i> Ellis & Everh. | E | Anti-inflammation (Dai et al. 2009) | P |
| <i>S. polyrhizum</i> (J.F. Gmel.) Pers. | E | Detumescence, haemostasis (Dai et al. 2009); anti-inflammation (Zhang et al. 2015d) | |
| <i>S. tenerum</i> Berk. & M.A. Curtis | E | | |
| <i>S. verrucosum</i> (Bull.) Pers. | | Haemostasis (Dai et al. 2009) | |
| <i>S. yunnanense</i> Y. Wang | E | | |
| <i>Sclerotinia sclerotiorum</i> (Lib.) de Bary | E | Antitumor (Dai et al. 2009) | |
| <i>Scorias spongiosa</i> (Schwein.) Fr. | E | Antioxidant, antitumor (Feng et al. 2013b; Yuan et al. 2013) | |
| <i>Scytinopogon echinosporus</i> (Berk. & Broome) Corner | E | | |
| <i>S. dengkouense</i> B. Liu et al. | | Haemostasis (Dai et al. 2009) | |
| <i>S. laceratum</i> (Ehrenb. ex Fr.) Lév. | | Disinfecting, haemostasis, detoxification (Dai et al. 2009) | |
| <i>S. ulanbuhense</i> B. Liu et al. | | Haemostasis (Dai et al. 2009) | |
| <i>Sepedonium ampullosporum</i> Damon | | Improving immunity (Dai et al. 2009); neuroleptic-like activity (Berek et al. 2009) | |
| <i>Serpula lacrymans</i> (Wulfen) J. Schröt. | | Antitumor (Dai et al. 2009) | |
| <i>Shiraia bambusicola</i> Henn. | | Relieving cough, tonifying meridians and collaterals, invigorating qi, replenishing the blood, promoting menstruation (Dai et al. 2009); anticancer, antidiabetic activity, antimicrobial, antioxidant (Huang et al. 2016e; Su et al. 2009; Ge et al. 2017; Zhao and Chen 2018) | |
| <i>Simblum gracile</i> Berk. | | Antitumor (Dai et al. 2009) | |
| <i>Singerocybe albofundibuliformis</i> (Seok et al.) Zhu L. Yang et al. | E | | |
| <i>Sparassis cystidiosa</i> f. <i>flabelliformis</i> Q. Zhao et al. | E | | |
| <i>S. latifolia</i> Y.C. Dai & Zheng Wang | E | Antibacteria (Dai et al. 2009); anticancer, antimicrobial, antioxidant, antiproliferation, anti-angiogenesis, anti-inflammation, anti-metastasis, immunostimulant, improving the impaired healing of diabetic wounds (Kwon et al. 2009; Yamamoto et al. 2009; Lee et al. 2010; Kim et al. 2010, 2012; Cui et al. 2013; Zhao et al. 2013; Choi et al. 2014b; Chandrasekaran et al. 2016; Song et al. 2017) | |
| <i>S. subalpina</i> Q. Zhao et al. | E | | |
| <i>Sphaerulina oryzina</i> Hara | | Antitumor (Dai et al. 2009) | |
| <i>Sporisorium sorghi</i> Ehrenb. ex Link | | Treating dysmenorrhea (Dai et al. 2009) | |
| <i>Stereum gausapatum</i> (Fr.) Fr. | | Antitumor (Dai et al. 2009) | |
| <i>S. hirsutum</i> (Willd.) Pers. | | Antitumor (Dai et al. 2009; Ma et al. 2014b; Qi et al. 2015); antimicrobial, immunosuppressant (Ma et al. 2014b; Qi et al. 2015) | |
| <i>Strobilomyces confusus</i> Singer | E | | |
| <i>S. glabriceps</i> W.F. Chiu | E | | |
| <i>S. strobilaceus</i> (Scop.) Berk. | E | Antitumor (Dai et al. 2009) | |
| <i>Strobilurus luchuensis</i> Har. Takah. et al. | E | | |
| <i>S. orientalis</i> Zhu L. Yang & J. Qin | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>S. pachycystidiatus</i> Zhu L. Yang & J. Qin | E | | |
| <i>Stropharia aeruginosa</i> (Curtis) Quél. | E | | P |
| <i>S. aeruginosa</i> f. <i>brunneola</i> Hongo | E | | |
| <i>S. hornemannii</i> (Fr.) S. Lundell & Nannf. | E | | |
| <i>S. rugosoannulata</i> Farl. ex Murrill | E | Antitumor (Dai et al. 2009; Wang et al. 2018a); antibacteria, antioxidant, anti-fatigue, lowering blood glucose, hypoglycemic activity (Song et al. 2009; Wang et al. 2009, 2018a; Yan et al. 2018) | |
| <i>S. squamosa</i> (Pers.) Quél. | | Antitumor (Dai et al. 2009) | |
| <i>S. yunnanensis</i> W.F. Chiu | | | P |
| <i>Suillellus luridus</i> (Schaeff.) Murrill | E | Antihyperglycemic activity, antioxidant (Liu et al. 2016d) | P |
| <i>S. queletii</i> (Schulzer) Vizzini et al. | E | | P |
| <i>Suillus acidus</i> (Peck) Singer | E | | |
| <i>S. albidipes</i> (Peck) Singer | E | | |
| <i>S. americanus</i> (Peck) Snell | E | | |
| <i>S. asiaticus</i> (Singer) Kretzer & T.D. Bruns | E | | |
| <i>S. bovinus</i> (L.) Roussel | E | Antitumor (Dai et al. 2009); antioxidant (Guo et al. 2012) | P |
| <i>S. brevipes</i> (Peck) Kuntze | E | | |
| <i>S. cavipes</i> (Klotzsch) A.H. Sm. & Thiers | E | | |
| <i>S. collinitus</i> (Fr.) Kuntze | E | Antioxidant, antitumor (Heleno et al. 2010; Vaz et al. 2012) | |
| <i>S. flavidus</i> (Fr.) J. Presl | E | | |
| <i>S. glandulosipes</i> Thiers & A.H. Sm. | E | | |
| <i>S. glandulosus</i> (Peck) Singer | E | | |
| <i>S. granulatus</i> (L.) Roussel | E | Treating Kaschin-Beck's disease, antitumor (Dai et al. 2009); antioxidant (Shi and Wu 2012) | P |
| <i>S. grevillei</i> (Klotzsch) Singer | E | Treating lumbago and skelalgia, limb numbness, antitumor (Dai et al. 2009); antioxidant (Witkowska et al. 2011) | |
| <i>S. grisellus</i> (Peck) Kretzer & T.D. Bruns | E | | |
| <i>S. kunmingensis</i> (W.F. Chiu) Q.B. Wang & Y.J. Yao | E | | |
| <i>S. kwangtungensis</i> R. Zhang et al. | E | | |
| <i>S. luteus</i> (L.) Roussel | E | Treating Kaschin-Beck's disease, antitumor (Dai et al. 2009); antidiabetic and antioxidant activities (Radzki et al. 2014; Wang et al. 2016b) | P |
| <i>S. phylopietus</i> R. Zhang et al. | E | | |
| <i>S. pictus</i> (Peck) Kuntze | | | P |
| <i>S. pinetorum</i> (W.F. Chiu) H. Engel & Klofac | E | | P |
| <i>S. placidus</i> (Bonord.) Singer | E | | P |
| <i>S. plorans</i> (Rolland) Kuntze | E | | |
| <i>S. subaureus</i> (Peck) Snell | E | Antioxidant (Zhou et al. 2016c) | |
| <i>S. subluteus</i> (Peck) Snell | E | | |
| <i>S. tomentosus</i> Singer | E | | |
| <i>S. variegatus</i> (Sw.) Richon & Roze | E | | |
| <i>S. viscidus</i> (L.) Roussel | E | Antitumor (Dai et al. 2009) | |
| <i>Sutorius eximius</i> (Peck) Halling et al. | E | | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>S. magnificus</i> (W.F. Chiu) G. Wu & Zhu L. Yang | E | | P |
| <i>S. obscureumbrinus</i> (Hongo) G. Wu & Zhu L. Yang | E | | |
| <i>S. rubriporus</i> G. Wu & Zhu L. Yang | E | | |
| <i>S. sanguineoides</i> G. Wu & Zhu L. Yang | | | P |
| <i>S. sanguineus</i> G. Wu & Zhu L. Yang | | | P |
| <i>S. venenatus</i> (Nagas.) G. Wu & Zhu L. Yang | | | P |
| <i>Taiwanofungus camphoratus</i> (M. Zang & C.H. Su) Sheng H. Wu et al. | | Antitumor (Dai et al. 2009; Chen et al. 2010c; Huang et al. 2012b; Lee et al. 2012c, 2014a; Liu et al. 2012b); antidiabetic and anti-obesogenic activities, antioxidant, antiproliferation, anti-fatigue, anti-inflammation, hepatoprotection against alcohol and CCL ₄ , prevention of allergic pneumonia, treatment of accelerated severe lupus nephritis (Hsieh et al. 2010; Kumar et al. 2011; Wu et al. 2011b; Huang et al. 2012a; Liu et al. 2012a, 2017h; Tsai et al. 2012; Li et al. 2015c, 2017g; Tien et al. 2017; Chang et al. 2018; Weng et al. 2018) | |
| <i>Tapinella atrotomentosa</i> (Batsch) Šutara | | Antibacteria (Liktor-Busa et al. 2016) | P |
| <i>T. panuoides</i> (Fr.) E.-J. Gilbert | | | P |
| <i>Tarzetta catinus</i> (Holmsk.) Korf & J.K. Rogers | E | | |
| <i>Tephroclype anthracophila</i> (Lasch) P.D. Orton | E | Antitumor (Dai et al. 2009) | |
| <i>Terfezia arenaria</i> (Moris) Trappe | E | Antitumor (Dai et al. 2009) | |
| <i>T. spinosa</i> Harkn. | E | | |
| <i>Termitomyces aurantiacus</i> (R. Heim) R. Heim | E | Antioxidant, lowering blood glucose (Zhang et al. 2014d) | |
| <i>T. bulborhizus</i> T.Z. Wei et al. | E | | |
| <i>T. clypeatus</i> R. Heim | E | Antimicrobial, antioxidant (Oyetayo 2009; Pattanayak et al. 2015) | |
| <i>T. entolomoides</i> R. Heim | E | | |
| <i>T. eurhizus</i> (Berk.) R. Heim | E | Improving the stomach, treating hemorrhoids, antitumor (Dai et al. 2009); anti-ulcerogenic activity (Chatterjee et al. 2013) | |
| <i>T. globulus</i> R. Heim & Gooss.-Font. | E | | |
| <i>T. heimii</i> Natarajan | E | | |
| <i>T. intermedius</i> Har. Takah. & Taneyama | E | | |
| <i>T. mammiformis</i> R. Heim | E | | |
| <i>T. microcarpus</i> (Berk. & Broome) R. Heim | E | Hypocholesterolemic activity (Nabubuya et al. 2010) | |
| <i>T. striatus</i> (Beeli) R. Heim | E | | |
| <i>T. tylerianus</i> Otieno | E | | |
| <i>Thelephora aurantiotincta</i> Corner | E | Anticancer (Norikura et al. 2011, 2013) | |
| <i>T. ganbajun</i> M. Zang | E | Antioxidant (Dai et al. 2009; Guo et al. 2012; Liu et al. 2016b); antioxidant, antiproliferation, lowering serum lipids (Liu et al. 2016b; Xu et al. 2016, 2017d) | |
| <i>T. japonica</i> Yasuda | E | | |
| <i>T. vialis</i> Schwein. | E | Treating lumbago and skelalgia, limb numbness (Dai et al. 2009) | |
| <i>Tolypocladium dujiaolongae</i> Y.P. Cao & C.R. Li | | | P |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>Trametes elegans</i> (Spreng.) Fr. | | Dispelling pathogenic wind, relieving itching (Dai et al. 2009); antimicrobial (Awala and Oyetayo 2015) | |
| <i>T. gibbosa</i> (Pers.) Fr. | | Antitumor (Dai et al. 2009); antimicrobial, antioxidant, antiviral, hypoglycemic activity (Johnsy and Kaviyaran 2011; Teplyakova et al. 2012; Ma et al. 2013b) | |
| <i>T. hirsuta</i> (Wulfen) Lloyd | | Treating rheumatism, relieving cough, antitumor (Dai et al. 2009); antimicrobial (Sivaprakasam et al. 2011) | |
| <i>T. orientalis</i> (Yasuda) Imazeki | | Treating pulmonary diseases, antitumor (Dai et al. 2009; Zheng et al. 2015a); antioxidant, hepatoprotection, immunomodulation (Zheng et al. 2014, 2015a, 2018) | |
| <i>T. pubescens</i> (Schumach.) Pilát | | Antitumor (Dai et al. 2009) | |
| <i>T. suaveolens</i> (L.) Fr. | | Anti-hypoxia, relieving cough and sputum (Zhao et al. 2018) | |
| <i>T. versicolor</i> (L.) Lloyd | | Relieving fever, treating hepatopathy, anti-inflammatory, antitumor (Dai et al. 2009; Ge et al. 2018); antioxidant, antiviral (Kozarski et al. 2012; Teplyakova et al. 2012) | |
| <i>Tremella aurantia</i> Schwein. | E | Dissipating phlegm, relieving cough, lowering blood pressure, antitumor (Dai et al. 2009); antioxidant, anti-tyrosinase (Park et al. 2015) | |
| <i>T. encephala</i> Pers. | E | | |
| <i>T. fuciformis</i> Berk. | E | Invigorating the kidney, moistening the lung, relieving fever (Dai et al. 2009); antioxidant, antitumor, anti-inflammation, immunomodulation, protection of alcohol-induced liver injury (Chen 2010; Li et al. 2014a; Xue 2014; Han et al. 2015; Chen et al. 2019) | |
| <i>T. hainanensis</i> Y.B. Peng | E | | |
| <i>T. mesenterica</i> Retz. | E | Treating neurasthenia and breathless, anti-hypertensive (Dai et al. 2009); antioxidant, treating asthma (Yan et al. 2011; Jiang et al. 2013) | |
| <i>T. pulvinalis</i> Kobayasi | E | | |
| <i>T. ramarioides</i> M. Zang | E | | |
| <i>T. samoensis</i> Lloyd | | Invigorating qi (Dai et al. 2009) | |
| <i>T. sanguinea</i> Y.B. Peng | E | Treating gynecopathy (Dai et al. 2009); anti-inflammation (Wang et al. 2019) | |
| <i>Tremiscus helvelloides</i> (DC.) Donk | | Antitumor (Dai et al. 2009) | |
| <i>Trichaleurina javanica</i> (Rehm) M. Carbone et al. | | | P |
| <i>Trichaptum abietinum</i> (Pers.) Ryvarden | | Antitumor (Dai et al. 2009) | |
| <i>T. bifforme</i> (Fr.) Ryvarden | | Antibacteria, antifungus, antitumor (Dai et al. 2009); antioxidant (Bal et al. 2017; Yang et al. 2017c) | |
| <i>T. byssogenum</i> (Jungh.) Ryvarden | | Antitumor (Dai et al. 2009) | |
| <i>T. fuscoviolaceum</i> (Ehrenb.) Ryvarden | | Antitumor (Dai et al. 2009); antibacteria, antioxidant (Nowacka et al. 2015) | |
| <i>Trichoderma cornu-damae</i> (Pat.) Z.X. Zhu & W.Y. Zhuang | | | P |
| <i>Tricholoma acerbum</i> (Bull.) Quél. | E | Antitumor (Dai et al. 2009); antioxidant (Froufe et al. 2009) | P |
| <i>T. albobrunneum</i> (Pers.) P. Kumm. | E | Antitumor (Dai et al. 2009) | P |
| <i>T. album</i> (Schaeff.) P. Kumm. | E | Antitumor (Dai et al. 2009) | P |
| <i>T. atroquamosum</i> Sacc. | E | | |
| <i>T. atroquamosum</i> var. <i>squarrulosum</i> (Bres.) Mort. Chr. & Noordel. | E | | |
| <i>T. bakamatsutake</i> Hongo | E | Antitumor (Dai et al. 2009) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|--|------------------------------|
| <i>T. caligatum</i> (Viv.) Ricken | E | Antimicrobial, antioxidant (Smolskaitė et al. 2015) | |
| <i>T. cingulatum</i> (Almfelt ex Fr.) Jacobashch | E | | |
| <i>T. columbetta</i> (Fr.) P. Kumm. | E | Antimicrobial, antioxidant (Smolskaitė et al. 2015) | |
| <i>T. equestre</i> (L.) P. Kumm. | E | | P |
| <i>T. flavovirens</i> (Pers.) S. Lundell | E | Antitumor (Dai et al. 2009) | |
| <i>T. fulvocastaneum</i> Hongo | E | | |
| <i>T. fulvum</i> (DC.) Bigeard & H. Guill. | E | Antitumor (Dai et al. 2009) | P |
| <i>T. highlandense</i> Zhu L Yang et al. | | | P |
| <i>T. imbricatum</i> (Fr.) P. Kumm. | E | Antioxidant, cholinesterase inhibitor (Tel et al. 2012) | |
| <i>T. lascivum</i> (Fr.) Gillet | E | | P |
| <i>T. matsutake</i> (S. Ito & S. Imai) Singer | E | Invigorating the stomach, treating bronchitis, antitumor (Dai et al. 2009; You et al. 2013; Hou et al. 2017; Liu et al. 2017j); angiotensin converting enzyme inhibitor, antihypertension, antimicrobial, antioxidant, immunomodulation (Byeon et al. 2009; Hou et al. 2013b; You et al. 2013; Geng et al. 2016; Chen et al. 2017a, b) | |
| <i>T. muscarioides</i> K. Reschke et al. | | | P |
| <i>T. muscarium</i> Kawam. ex Hongo | | Antitumor (Dai et al. 2009) | P |
| <i>T. orirubens</i> Quél. | E | Antitumor (Dai et al. 2009) | |
| <i>T. pardinum</i> (Pers.) Quél. | | | P |
| <i>T. pessundatum</i> (Fr.) Quél. | E | | P |
| <i>T. populinum</i> J.E. Lange | E | Treating hypersensitivity vasculitis (Dai et al. 2009); antioxidant (Guo et al. 2018a) | |
| <i>T. portentosum</i> (Fr.) Quél. | E | Antitumor (Dai et al. 2009); antimicrobial (Alves et al. 2012) | |
| <i>T. robustum</i> (Alb. & Schwein.) Ricken | E | antitumor (Dai et al. 2009) | |
| <i>T. saponaceum</i> (Fr.) P. Kumm. | | Antibacteria (Dai et al. 2009) | P |
| <i>T. sculpturatum</i> (Fr.) Quél. | E | | P |
| <i>T. sciodes</i> (Pers.) C. Martín | | | P |
| <i>T. sejunctum</i> (Sowerby) Quél. | E | Antitumor (Dai et al. 2009) | |
| <i>T. sinopardinum</i> Zhu L Yang et al. | | | P |
| <i>T. sulphureum</i> (Bull.) P. Kumm. | | Antitumor (Dai et al. 2009); antimicrobial, antioxidant (Heleno et al. 2010; Klančnik et al. 2017) | P |
| <i>T. tigrinum</i> (Schaeff.) Gillet | | | P |
| <i>T. ustale</i> (Fr.) P. Kumm. | | Antitumor (Dai et al. 2009); antioxidant (Reis et al. 2011b) | P |
| <i>T. vaccinum</i> (Schaeff.) P. Kumm. | E | Antitumor (Dai et al. 2009) | |
| <i>T. virgatum</i> (Fr.) P. Kumm. | | Antitumor (Dai et al. 2009) | P |
| <i>T. zelleri</i> (D.E. Stuntz & A.H. Sm.) Ovrebo & Tylutki | E | | |
| <i>Tricholomopsis bambusina</i> Hongo | | Antitumor (Dai et al. 2009) | P |
| <i>T. decora</i> (Fr.) Singer | E | | |
| <i>T. rutilans</i> (Schaeff.) Singer | | | P |
| <i>Trogia venenata</i> Zhu L. Yang et al. | | | P |
| <i>Tuber aestivum</i> (Wulfen) Spreng. | E | Anticancer, antioxidant, immunomodulation (Beara et al. 2014; Jin et al. 2017) | |
| <i>T. borchii</i> var. <i>sphaerosperma</i> Malençon | E | | |
| <i>T. excavatum</i> Vittad. | E | | |
| <i>T. gigantosporum</i> Y. Wang & Z.P. Li | E | | |
| <i>T. glabrum</i> L. Fan & S. Feng | E | | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>T. huidongense</i> Y. Wang | E | Antioxidant (Chen et al. 2016a) | |
| <i>T. indicum</i> Cooke & Massee | E | Antitumor (Dai et al. 2009; Xiao et al. 2014); antioxidant, immunomodulation (Guo et al. 2011b; Luo et al. 2011a; Jin et al. 2017) | |
| <i>T. latisporum</i> Juan Chen & P.G. Liu | E | Antioxidant (Yan et al. 2017) | |
| <i>T. liaotongense</i> Y. Wang | E | | |
| <i>T. lijiangense</i> L. Fan & J.Z. Cao | E | | |
| <i>T. liyuanum</i> L. Fan & J.Z. Cao | E | Antioxidant (Li and Fan 2015) | |
| <i>T. neoexcavatum</i> L. Fan & Yu Li | E | | |
| <i>T. panzhihuanense</i> X.J. Deng & Y. Wang | E | Immunomodulation (Jin et al. 2017) | |
| <i>T. pseudoexcavatum</i> Y. Wang et al. | E | | |
| <i>T. pseudohimalayense</i> G. Moreno et al. | E | Antioxidant (Yan et al. 2017) | |
| <i>T. pseudomagnatum</i> L. Fan | E | | |
| <i>T. pseudosphaerosporum</i> L. Fan | E | | |
| <i>T. sinoaestivum</i> J.P. Zhang & P.G. Liu | E | | |
| <i>T. sinoexcavatum</i> L. Fan & Yu Li | E | | |
| <i>T. sinosphaerosporum</i> L. Fan et al. | E | | |
| <i>T. subglobosum</i> L. Fan & C.L. Hou | E | Antioxidant (Yan et al. 2017) | |
| <i>T. taiyuanense</i> B. Liu | E | | |
| <i>Tulostoma brevistipitatum</i> B. Liu et al. | | Haemostasis (Dai et al. 2009) | |
| <i>T. brumale</i> Pers. | | Haemostasis (Dai et al. 2009) | |
| <i>T. cretaceum</i> Long | | Haemostasis (Dai et al. 2009) | |
| <i>T. helanshanense</i> B. Liu et al. | | Haemostasis (Dai et al. 2009) | |
| <i>T. jordanii</i> Pat. | | Detumescence, haemostasis, clearing the lung, relieving sore throat, detoxification (Dai et al. 2009) | |
| <i>T. kotlabae</i> Pouzar | | Haemostasis, anti-inflammation (Dai et al. 2009) | |
| <i>T. lloydii</i> Bres. | | Haemostasis (Dai et al. 2009) | |
| <i>T. sabulosum</i> B. Liu et al. | | Haemostasis (Dai et al. 2009) | |
| <i>T. verrucosum</i> Morgan | | Haemostasis (Dai et al. 2009) | |
| <i>Turbinellus floccosus</i> (Schwein.) Earle ex Giachini & Castellano | | | P |
| <i>T. kauffmanii</i> (A.H. Sm.) Giachini | | | P |
| <i>Tylophilus alboater</i> (Schwein.) Murrill | E | | |
| <i>T. albofarinaceus</i> (W.F. Chiu) F.L. Tai | E | | |
| <i>T. chromapes</i> (Frost) A.H. Sm. & Thiers | E | | |
| <i>T. felleus</i> (Bull.) P. Karst. | | Anti-inflammation, treating hepatopathy (Dai et al. 2009) | P |
| <i>T. ferrugineus</i> (Frost) Singer | | | P |
| <i>T. indecisus</i> (Peck) Murrill | E | | |
| <i>T. neofelleus</i> Hongo | | | P |
| <i>T. otsuensis</i> Hongo | | | P |
| <i>T. pseudoballoui</i> D. Chakr. et al. | E | | |
| <i>T. punctatofumosus</i> (W.F. Chiu) F.L. Tai | E | | |
| <i>Ustilaginoidea virens</i> (Cooke) Takah. | | Anti-inflammation (Dai et al. 2009) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|--|---------------------------|--|------------------------------|
| <i>Ustilago crameri</i> Körn. | | Improving digestion (Dai et al. 2009) | |
| <i>U. esculenta</i> Henn. | E | Treating red eyes due to wind-heat (Dai et al. 2009) | |
| <i>U. maydis</i> (DC.) Corda | E | Treating hepatopathy and neurasthenia (Dai et al. 2009) | |
| <i>U. nuda</i> (C.N. Jensen) Kellerm. & Swingle | | Diaphoresis, analgesic (Dai et al. 2009) | |
| <i>U. tritici</i> (Bjerk.) Rostr. | | Diaphoresis, analgesic (Dai et al. 2009) | |
| <i>Vanderbylia fraxinea</i> (Bull.) D.A. Reid | | Antitumor (Dai et al. 2009) | |
| <i>Veloporphyrellus velatus</i> (Rostr.) Y.C. Li & Zhu L. Yang | E | | |
| <i>Verpa bohemica</i> (Krombh.) J. Schröt. | E | Antimicrobial, antioxidant (Shameem et al. 2017a, b) | P |
| <i>V. conica</i> (O.F. Müll.) Sw. | E | | |
| <i>V. digitaliformis</i> Pers. | E | | |
| <i>Vibrissea lutea</i> Peck | | | P |
| <i>Volvariella bombycina</i> (Schaeff.) Singer | E | Antioxidant (Qi et al. 2013) | |
| <i>V. esculenta</i> (Masse) Singer | E | | |
| <i>V. volvacea</i> (Bull.) Singer | E | Treating scurvy, antitumor (Dai et al. 2009; Wu et al. 2011a); antitumor, lowering blood glucose (Ma et al. 2016) | |
| <i>Volvopluteus gloiocephalus</i> (DC.) Vizzini et al. | | | P |
| <i>Wolfiporia cocos</i> (Schwein.) Ryvarden & Gilb. | E | Relieving cough, inducing diuresis, calming the nervousness, relieving fever, antitumor (Dai et al. 2009; Ke et al. 2010; Cheng et al. 2013; Dong et al. 2015); adjustment of intestinal bacterial flora, antihyperlipidemic activity, antioxidant, anti-hepatitis B virus, anti-inflammation, anti-metastasis, anti-tyrosinase, hypoglycemic activity, improvement of cardiac function, improvement of learning and memory abilities, improvement of liver fibrosis, prevention of diabetic nephropathy, sedative and hypnotic activities (Shi and Piao 2009; Ke et al. 2010; Lu et al. 2010; Li et al. 2011; Song et al. 2011b; Zhang et al. 2013a; Wu et al. 2014c; Chen 2015; Huang et al. 2016a, b; Jiang and Wang 2017; Zhao 2017) | |
| <i>Wynnea americana</i> Thaxt. | E | | P |
| <i>W. gigantea</i> Berk. & M.A. Curtis | E | | P |
| <i>W. gigantea</i> var. <i>nana</i> Pat. | E | | |
| <i>Xanthoconium affine</i> (Peck) Singer | E | | P |
| <i>Xerocomus alutaceus</i> (Morgan) E.A. Dick & Snell | E | | |
| <i>X. illudens</i> (Peck) Singer | E | | |
| <i>X. nigromaculatus</i> Hongo | | Antitumor (Dai et al. 2009) | P |
| <i>X. parvulus</i> Hongo | E | | |
| <i>X. rugosellus</i> (W.F. Chiu) F.L. Tai | E | | |
| <i>X. subtomentosus</i> (L.) Quéf. | E | Antioxidant (Witkowska et al. 2011) | |
| <i>X. yunnanensis</i> (W.F. Chiu) F.L. Tai | E | | |
| <i>Xeromphalina campanella</i> (Batsch) Kühner & Maire | | Antitumor (Dai et al. 2009) | |
| <i>Xerula sinopudens</i> R.H. Petersen & Nagas. | E | | |
| <i>X. strigosa</i> Zhu L. Yang et al. | E | | |
| <i>Xylaria carpophila</i> (Pers.) Fr. | | Antitumor (Yin et al. 2011) | |
| <i>X. longipes</i> Nitschke | | Antifungus (Dai et al. 2009) | |

Table 1 (continued)

| Species name | Edible fungi ^a | Medicinal fungi and their function(s) ^b | Poisonous fungi ^c |
|---|---------------------------|---|------------------------------|
| <i>X. nigripes</i> (Klotzsch) Cooke | | Inducing diuresis, invigorating the kidney, improving immunity (Dai et al. 2009; Ko et al. 2011); antioxidant, anti-depression, hepatoprotection, hypoglycemic activity, mitigation of spatial memory impairment (Song et al. 2011a; Zhao et al. 2014c; Chen et al. 2015a; Peng et al. 2015a) | |
| <i>X. sanchezii</i> Lloyd | | Inducing diuresis (Dai et al. 2009) | |
| <i>Xyloboletus annosus</i> (Berk. & Broome) Boidin | | Antitumor (Dai et al. 2009) | |
| <i>X. frustulatus</i> (Pers.) P. Karst. | | Antitumor (Dai et al. 2009) | |
| <i>X. princeps</i> (Jungh.) Boidin | | Antitumor (Dai et al. 2009) | |
| <i>Zangia roseola</i> (W.F. Chiu) Y.C. Li & Zhu L. Yang | E | | |

^aE means that this species is edible; blank means that this species is inedible or not suitable for being eaten according to the current knowledge

^bFunction(s) includes the previous recorded functions in Dai et al. (2009) and other functions published since 2009 are indicated in the given references

^cP means that this species is poisonous; blank means that this species is non-poisonous according to the current knowledge

Pers. (Zhong et al. 2018), *Laccaria* Berk. & Broome (Vincenot et al. 2017), *Lactarius* Pers. (Wang et al. 2015f), *Laetiporus* Murrill (Song et al. 2014, 2018b), *Phallus* Junius ex L. (Song et al. 2018a), *Retiboletus* Manfr. Binder & Bresinsky (Zeng et al. 2016), *Rubroboletus* Kuan Zhao & Zhu L. Yang (Zhao and Shao 2017), *Strobilurus* Singer (Qin et al. 2018a) and *Sutorius* Halling, Nuhn & N.A. Fechner (Wu et al. 2016a). Certain taxonomic studies have clarified the reality of Chinese edible species previously identified to European species names and/or found more cryptic species from a single edible species complex. For example, the winter mushroom (Enokitake) in East Asia, previously misidentified as the European winter mushroom *Flammulina velutipes* (Curtis) Singer, should be *F. filiformis* (Z.W. Ge, X.B. Liu & Zhu L. Yang) Wang et al. (2018c). Heimuer, another well-used mushroom, was also described to be a new species *Auricularia heimuer* F. Wu, B.K. Cui & Y.C. Dai instead of previous European name *A. auricula-judae* (Bull.) Qué. (Wu et al. 2014a). The Bachu mushroom was previously identified as European name *Helvella leucopus* Pers; however, Zhao et al. (2016a) found that it differs from *H. leucopus* and, moreover, is composed of two cryptic new species, namely *H. bachu* Q. Zhao, Zhu L. Yang & K.D. Hyde and *H. subspadicea* Q. Zhao, Zhu L. Yang & K.D. Hyde. Additional knowledge about newly added edible species comes from our investigations on local mushroom industries and wild mushroom markets. One typical example of this kind of species is *Oudemansiella raphanipes* (Berk.) Pegler & T.W.K. Young that has been commercially cultivated as an edible mushroom (Hao et al. 2016). On the other side, some edible species were evidenced outside of China and thus are excluded from

Chinese macrofungal resources. This phenomenon mostly happens to the recently well-studied fungal groups in taxonomy, like the family Boletaceae.

Of the 692 medicinal macrofungi, 173 are newly included species compared with Dai et al. (2009). The most important newly included species are *Ganoderma lingzhi* Sheng H. Wu, Y. Cao & Y.C. Dai and *Sanghuangporus sanghuang* (Sheng H. Wu, T. Hatt. & Y.C. Dai) Sheng H. Wu, L.W. Zhou & Y.C. Dai, which are considered to, respectively, represent the genuine species of Lingzhi and Sanghuang recorded in the ancient books of traditional Chinese medicine (Cao et al. 2012; Wu et al. 2012b; Zhou et al. 2016a). Another noteworthy mentioned species newly included is *Ganoderma leucocontextum* T.H. Li, W.Q. Deng, Sheng H. Wu, Dong M. Wang & H.P. Hu, which was described from Tibet and Sichuan, southwestern China in 2015 (Li et al. 2015f) and has been successfully artificially cultivated (Xiong et al. 2017b). This *Ganoderma* species grows in high altitude mountain areas and thus is considered to possess better medicinal functions than those species growing in lowland areas. In a short time since the description of *G. leucocontextum*, many studies have focused on this species and did reveal its medicinal functions (Wang et al. 2015b, 2017d; Chen et al. 2016c; Zhao et al. 2016c, d; Zhang et al. 2017a, 2018a). Noteworthy, the species names themselves of certain macrofungi are not directly referred in any medicinal study, but these species themselves, recently segregated as cryptic species from previous well-studied medicinal species, have quite likely been used in medicinal studies. These cryptic species are included here and their functions are labeled following the phylogenetically closely related species.

Future medicinal studies could follow this clue to further confirm the functions of these species. Importantly, this kind of cryptic species includes *Sanghuangporus alpinus* (Y.C. Dai & X.M. Tian) L.W. Zhou & Y.C. Dai, *S. quercicola* Lin Zhu & B.K. Cui, *S. weigelae* (T. Hatt. & Sheng H. Wu) Sheng H. Wu, L.W. Zhou & Y.C. Dai and *S. zonatus* (Y.C. Dai & X.M. Tian) L.W. Zhou & Y.C. Dai, which were segregated from the medicinal Sanghuang species complex (Wu et al. 2012b; Tian et al. 2013; Zhou et al. 2016a; Zhu et al. 2017b). Other examples include *Fomitiporia alpina* B.K. Cui & Hong Chen, *F. gaoligongensis* B.K. Cui & Hong Chen, *F. norbulingka* B.K. Cui & Hong Chen, *F. pentaphylacis* L.W. Zhou, *F. punicata* Y.C. Dai et al., *F. rhamnoides* T.Z. Liu & F. Wu, *F. subhippophaeicola* B.K. Cui & H. Chen, *F. subrobusta* B.K. Cui & Hong Chen, and *F. tenuitubus* L.W. Zhou that were separated from the *Fomitiporia robusta* (P. Karst.) Fiasson & Niemelä complex (Dai 2010; Zhou and Xue 2012; Chen et al. 2016b; Chen and Cui 2017; Liu et al. 2018f); *Fomitiporia bannaensis* Y.C. Dai, *F. hainaniana* B.K. Cui & Hong Chen and *F. subtropica* B.K. Cui & Hong Chen from the *Fomitiporia punctata* (P. Karst.) Murrill complex (Dai 2010; Chen and Cui 2017); *Phellinus monticola* L.W. Zhou & Y.C. Dai and *P. padicola* L.W. Zhou & Y.C. Dai from the *Phellinus igniarius* (L.) Quél. complex (Zhou et al. 2016b); and *Ophiocordyceps highlandensis* Zhu L. Yang & J. Qin from *O. barnesii* (Thwaites) G.H. Sung et al. complex (Yang et al. 2015). In the case that 173 species are newly included, but the number of medicinal taxa is increased by 152 compared with Dai et al. (2009). It means that 21 species are deleted from the previous checklist of Dai et al. (2009). That is because these deleted species are found to be not present in China, such as *Auricularia auricula-judae* (Wu et al. 2014a), *Cordyceps gunnii* (Berk.) Berk. (Wen et al. 2017), *Flammulina velutipes* (Zhao et al. 2016a), *Phellinus laevigatus* (P. Karst.) Bourdot & Galzin (Zhou et al. 2016b), *P. tuberculosus* Niemelä (Zhou et al. 2016b) and *Phylloporia ribis* (Schumach.) Ryvarden (Qin et al. 2018b) etc.

Among the previously recorded medicinal species in Dai et al. (2009), 198 species have been recognized to possess new medicinal functions, while the known medicinal functions of 65 species have been verified by later studies (Table 1). The most common functions possessed by Chinese medicinal macrofungi are antitumor or anticancer (399 species), followed by antioxidant (244 species), antimicrobial (antibacteria/antifungus/antivirus, 185 species), immunomodulation or immunostimulant (53 species), anti-inflammation (48 species) and so on.

Although a total of 692 medicinal macrofungi are recorded here, quite possibly more additional medicinal species have already been studied. For example, Gao et al. (2016a) reviewed the medicinal functions of the genus

Xylaria. However, most of the cited studies by Gao et al. (2016a) named the fungal materials as *Xylaria* sp. We can postulate that certain materials in these studies represent previously undescribed species. We suggest that all macrofungi being subjected to medicinal studies should be identified to species level in future as many as possible.

The increase of poisonous macrofungal number by 45 compared with Bau et al. (2014) is mostly contributed by mushroom poisoning cases (Chen et al. 2014; Li et al. 2015b), and newly described species phylogenetically close to lethal mushrooms in the genera *Amanita* (Cai et al. 2016; Cui et al. 2018), *Conocybe* Fayod (Liu and Bau 2018), *Coprinellus* P. Karst. (Li et al. 2015g; Huang and Bau 2018), *Lepiota* (Pers.) Gray (Liang and Yang 2011; Cai et al. 2018), *Tolypocladium* W. Gams (Li et al. 2018b), *Tricholoma* Fr. (Yang et al. 2017d) and so on. Otherwise, it is difficult to judge whether a mushroom is poisonous or not, because the toxicity of macrofungi is sometimes dependent on the ways of mushrooms cooking, the number of mushrooms that people eat and the individuals who eat mushrooms. This is also the reason that some edible and medicinal macrofungi are also labelled as poisonous species here (Table 1). Therefore, we suggest that people do not try to collect and eat wild mushrooms, and that media introduce knowledge about the dangers of hunting wild mushrooms more proactively. As the increase of known poisonous mushrooms, the classification of poisoning symptoms is also revised accordingly. Chen et al. (2014) suggested seven symptoms for clinical diagnosis and treatment in China, namely gastroenteritis, acute liver failure, acute renal failure, psychoneurological disorder, hemolysis, rhabdomyolysis, and photosensitive dermatitis, whereas White et al. (2019) proposed a six-group poisoning classification based on key clinical features, including cytotoxic mushroom poisoning, neurotoxic mushroom poisoning, myotoxic mushroom poisoning, metabolic, endocrine and related toxicity mushroom poisoning, gastrointestinal irritant mushroom poisoning, and miscellaneous adverse reactions to mushrooms.

Among the 1662 macrofungal records in the current study, 277 species are edible simultaneously with certain medicinal functions and without known toxicity. These 277 species could be treated as “Gold Mushrooms”, including *Agaricus bisporus* (J.E. Lange) Imbach, *Armillaria ostoyae* (Romagn.) Herink, *Auricularia heimuer*, *Flammulina filiformis*, *Naematelia aurantialba* (Bandoni & M. Zang) Millanes & Wedin, *Tremella fuciformis* Berk., and so on that have been artificially cultivated and widely available on sale for years. All of people, except those who are not suitable for ingesting mushrooms because of other diseases, are encouraged to eat these cultivated “Gold Mushrooms” normally. On the other hand, 193 edible and/or medicinal species are also recognized as poisonous

mushrooms. To avoid poisoning caused by these species, ingestion either in a right way or a small amount is needed. For example, the edible and medicinal species *Bulgaria inquinans* (Pers.) Fr. can cause a photosensitive toxic symptom by synthesizing a chemical compound of diisobutyl phthalate (Bao et al. 2019). After treatment of *B. inquinans* in alkaline water, diisobutyl phthalate can be degraded and thus the toxicity can be decreased. Alternatively, people are suggested to not eat these species at all.

Conclusion

We estimated 1662 taxa as Chinese macrofungal resource (1020 edible, 692 medicinal and 480 poisonous species). How to develop and utilize these resources is still a challenge yet. Although more and more edible species have been successfully artificially cultivated year by year, only about 50 species are commonly used for commercial production (Zhang et al. 2015b). This number just occupies less than 5% of all known edible macrofungi in China. The status of medicinal macrofungi is even worse than that of edible species. To the best of our knowledge, *Ganoderma lingzhi* and a few other medicinal species only could be called as artificial cultivation in a large scale. Regarding poisonous macrofungi, nearly all what we have considered is to avoid mushroom poisoning. However, the mycotoxins metabolized by these poisonous species could be a huge wealth of natural products to be explored. In future, with the cooperation of synthetic biology technology and industrial upgrading, Chinese macrofungal resource will benefit people better.

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