



GFV

Gesellschaft für Vitalpilzkunde e.V.



MEDICINAL MUSHROOMS

Natural healing with tradition

A brief overview

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Introduction

Mushrooms are fascinating creatures. They are neither flora nor fauna and have developed intelligent survival strategies which protect their existence to this day in a wide variety of types and almost all over our planet.

Particularly in Asia, but also in European monasteries, the healing power of the mushrooms was recognised many centuries ago. They were successfully used to restore sick people to health and to protect healthy people from becoming sick. While TCM (Traditional Chinese Medicine) can look back on a long tradition of using the mushrooms, mycotherapy here in Germany has long been seen as an outsider's method without a scientific basis for its efficacy. Fortunately, this has since changed – especially because study and research findings speak a clear language.

With their valuable components, medicinal mushrooms are suited to a variety of indications. They can be used to help treat common 'modern' complaints, such as high blood pressure, metabolic disorders and allergies, as well as in the prevention and complementary treatment of cancers. They regulate the immune system, combat premature aging processes and have a balancing effect on the psyche – and all without unwanted, harmful side effects.

In this brochure, we would like to present brief profiles of the twelve most important medicinal mushrooms while also offering assistance in choosing the right medicinal mushroom for you to prevent or treat complaints. Of course, this information is no substitute for professional advice from an experienced mycotherapist.



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What is better: mushroom powder or mushroom extract?

Better or worse? This question is not so easy to answer. The various dosage forms of the mushrooms add their own accents to treatment, which unfurl their active power according to the patient's individual symptoms. As a rule, mushroom powder is particular well-suited to holistic illness prevention, while mushroom extract is above all used for specific illnesses due to its concentrated active ingredient composition. However, exceptions prove the rule – if you are unsure, you should seek the advice of a mycotherapist.

Powder – perfect composition of nature

The powder manufactured from the mushroom's fruiting body using mechanical crushing offers a composition of active ingredients and secondary components that is perfectly arranged by nature. The almost perfect fine tuning of amino acids, provitamins, enzymes, vitamins, minerals, trace elements and other active components stimulates many positively balancing processes in the body. Health-promoting reactions are accelerated, making this dosage form is particularly suited as holistic illness prevention.

Extract – targeted active ingredients with better availability

The cell walls of the mushrooms consist of chitin and not, like plants, of cellulose. As the human organism is not able to utilise chitin, it cannot sufficiently digest some of the particularly important active ingredients from the mushroom powder. This is particularly true of secondary components that are used therapeutically, such as polysaccharides and triterpenes. The extraction process enables these important active ingredients to be acquired in a residue-free, concentrated form and make them easily available.

Combination of powder and extract – combined benefits

Today, combinations of mushroom powder and extract are also offered together in one capsule. This makes it possible to use nature's material composition, which cannot be beaten by humans, while also adding specific individual active ingredients in a high concentration. In this way, the dosage can also be kept significantly lower than when pure mushroom powder is used therapeutically.

Liquid extract – optimum pharmaceutical form for special indications

The valuable components of many medicinal mushrooms are also available as liquid extracts. The benefits of liquids, which are traditionally acquired using hot water extraction, include their fast resorption, which begins in the mucous membranes of the mouth. They are particularly well-suited to indications that require a high or very precise dose, as well as for people who have problems swallowing or generally do not want to swallow tablets. Liquid extracts are characterised by a very high concentration of substances.

Combining medicinal mushrooms with other substances

Medicinal mushrooms are excellent at creating a balance in the body and protecting against various illnesses, and can be used therapeutically. Certain secondary plant compounds and medicinal herbs also have this effect. In combination, medicinal mushrooms and secondary plant compounds can often support each other. However, medicinal mushrooms and secondary plant compounds are only able to balance out a deficiency of vitamins, minerals and other micronutrients to a very small degree. This is why combining them with orthomolecular substances is often helpful. However, the combinations should not be made arbitrarily – ideally, ask your mycotherapist, alternative practitioner or doctor.

What is important?

The fineness or the coarseness is a clear indicator of quality. The finer a powder, the better quality and more effective it is, as the important components have greater bio-availability.



Rough powder / mushroom pieces
= hardly effective



Fine powder
= high bioavailability

A rough powder or mushroom pieces are not suitable for direct use in capsules or in a pure form as the body can actually only digest very few components. This pharmaceutical form is well-suited for teas, as adding hot water triggers an extraction process and thus some of the components can be digested. A fine powder makes it easy for the body to digest the components and is therefore more better-suited for taking in capsule, tablet or in pure powder form. Extracts in liquid form are particularly pleasant to take in the event of problems swallowing.

Agaricus blazei Murrill

The positive effects of *Agaricus blazei* Murrill on human health were first discovered in Brazil a few decades ago. Cancers hardly ever occurred in the rural population around São Paulo from where the mushroom originates and where it was often consumed as a food. Demand increased rapidly from that point on, and ABM, which in contrast to many other medicinal mushrooms does not grow on wood but instead requires a fermented culture medium, is traded at high prices. Basic research, too, shows strong interest in this natural product.

Other names:

ABM, *Agaricus subrufescens*, *Agaricus brasiliensis*, mushroom of the sun, almond mushroom, himematsutake

Applications tested in practice

- Prevention of and complementary therapy for cancers

There are indications that ABM can act against changes at a cell level as early as in the first phases of tumour development. It therefore appears well-suited for preventative use with an increased risk of cancer. The use of ABM in patients with metastasising tumours is also rated positively within medical research.

- Support of healing for skin conditions

Particularly for skin conditions triggered by bacteria or viruses, ABM can positively influence the healing process. According to analyses, ABM is able to inhibit the reproduction of a variety of pathogenic germs. The medicinal mushroom is also suitable for alleviating symptoms in acne and psoriasis.

- Boosting the immune system

The activation of the immune system by substances in ABM plays a crucial role in the prevention of disorders that are generally inflammatory. An increase in phagocytic activity by the ABM beta-glucan fractions is described, and ABM can also stimulate the production of inflammation-relevant cytokines.

- Treatment of allergies¹

It has been shown that ABM supplementation also influences the formation of immunoglobulins. This slows down hypersensitivity to antigens, thus making ABM an important medicinal mushroom for allergic reactions. There is also reported to be an influence on histamine release.

- Complementary therapy for diabetes mellitus

A clinical study involving type 2 diabetes patients demonstrated that complementary therapy with ABM extract significantly improves insulin sensitivity. This may open up a new application for this versatile medicinal mushroom in an indication field that has previously been largely ignored.

Special features:

The mushroom, which is related to the button mushroom, is particularly well-suited to supporting the body's own defences and exerts its strengths in both the fight against cancer and for infections and allergies.

Origin:

Agaricus blazei Murrill originally comes from the Brazilian rainforest and is now also cultivated in various countries in Asia.

¹*Immunomodulating Activity of Agaricus brasiliensis KA21 in Mice and in Human Volunteers*, Ying Liu, *Advance Access Publication 12 April 2007 eCAM 2008; 5(2)205–219*

Auricularia polytricha

Auricularia polytricha is one of the oldest edible fungi and has been grown in China for around 1500 years. The distinctive-looking mushroom grows worldwide and favours old elder wood in particular. Its English name of Jew's ear originates from a Christian legend that states that Judas hanged himself from an elder tree and ear-shaped mushrooms grew on the tree's trunk. Auricularia has been used for healing purposes for centuries, both in China and in Europe. It is mainly used to strengthen blood vessels and the cardiovascular system.

Other names:

Auricularia auricula judae, Jew's ear, black Chinese fungus, wood fungus, Mu Err



Applications tested in practice

- Promotion of blood flow and regulation of the blood pressure

Many studies have been able to show that Auricularia can inhibit blood clotting and thus improve the flow properties of the blood – an effect that is particularly of benefit for blood vessels that are already damaged such as arteriosclerosis, as well as high blood pressure.

- Reduction in blood clotting, thus a preventative effect against heart attacks, strokes and thrombosis

Thanks to its anticoagulant effect, Auricularia is used to improve blood flow. Good treatment results have been reported by administering Auricularia substitution, particularly with regard to reducing the risk of a stroke or heart attack and for circulatory problems.

- Boosting the body's own defences

There are indications that Auricularia possesses immunomodulating properties. A specific protein has been described which was shown to improve the production of immunocytes. The medicinal mushroom appears to be particularly well-suited to boosting the immunological parameters for tumours.

- Support of healing for skin and eye inflammation¹

One positive effect of the beta-D-glucans contained is the anti-inflammatory effect on skin, mucous membrane and eye conditions. The medicinal mushroom appears able to halt infectious processes and accelerate the healing of inflammation.

Special features:

In contrast to chemical, pharmaceutical blood thinners, Auricularia can improve the flow properties of the blood without attacking the vessel walls.

Origin:

Auricularia is spread almost throughout the world and can also be found growing wild in Germany.

¹Anti-inflammatory Activity of Dichloromethane Extract of Auricularia auricula-judae in RAW264.7 Cells, Dereje Damte et.al., Toxicology Research Vol. 27, No. 1, pp. 11-14 (2011), DOI:10.5487/TR.2011.27.1.011

Chaga

The appearance of Chaga is reminiscent of an area of bark that has irregular furrows, a broken, bulbous shape and looks as if it has been burned. Its external and internal use has a tradition dating back centuries. According to legend, the Grand Prince of Kievan Rus', Vladimir II Monomakh, who lived in the 11th/12th century, was cured of cancer of the lower lip due to a broth made from Chaga. The mushroom traditionally helps to heal wounds, burns and skin inflammation. It is also used for inflammatory gastro-intestinal illnesses such as gastritis or peptic ulcers as well as malignant tumours.

Other names:

Inonotus obliquus, Fungus betulinus, Kabanoanatake, Bai Hua Rong, Hua Jie Kong Jun, sterile conk trunk rot of birch



Applications tested in practice

• Cell-protecting potential

The antioxidant, cell-protecting potential of Chaga can be attributed both to the beta-glucans it contains and other polysaccharides as well as to the active substance betulin. The latter is also interesting for prevention, as the substance can trigger the production of interferon, whereby the cellular mutation rate is reduced.

• Inflammation reduction, soothing and stabilisation for inflammatory gastro-intestinal illnesses, peptic ulcers, chronic gastritis, ulcerative colitis^{1,2}

A great deal of research indicates that Chaga can help with inflammatory disorders of the digestive tract – due to the beta-glucans, which have anti-inflammatory, antibacterial and antiviral properties. In addition, betulin can also have an anti-inflammatory effect.

• Promotion of wound healing

It is presumably the interaction of beta-glucans and melanin, which are known to have photoprotective properties, that accounts for the ability of Chaga to protect against melanoma. Chaga can not only be used as natural skin protection, but also used alongside radiotherapy for tumours.

• Use as a general tonic

Above all in traditional Chinese medicine, Chaga is considered a proven tonic with both a stimulating and balancing effect.

Special features:

Only Chaga that grows on birch is used as a medicinal mushroom.

Origin:

Chaga grows on various deciduous trees in moist, swampy areas of forest in Russia, Poland, the Baltic region and Finland.

¹Anti-Oxidant and Anti-Inflammatory Activities of Inonotus obliquus and Germinated Brown Rice Extracts, Trishna Debnath et al., Molecules 2013, 18, 9293-9304; doi:10.3390/molecules18089293

²Orally administered aqueous extract of Inonotus obliquus ameliorates acute inflammation in dextran sulfate sodium (DSS)-induced colitis in mice, Siddhartha Kumar Mishra et al., Journal of Ethnopharmacology Volume 145, Issue 2, 28 September 2012, Pages 524–532

Champignon

Everyone knows it, the best like it – however, hardly any attention is paid to *Agaricus bisporus*, better known as the button mushroom, as a medicinal mushroom, at least in Germany. This mushroom, which is found all over the world, has been cultivated for centuries and, like *Agaricus blazei* Murrill, is part of the *Agaricus* genus, contains many valuable components. Besides the mushroom's use in cuisine, they justify its targeted use for certain indications – for instance, to support the liver, to protect against cell degeneration and to promote wound healing.

Other names:

Agaricus bisporus, *Agaricus brunnescens*, *Agaricus hortensis*, button mushroom, champignon mushroom, Portobello mushroom, mo gu

Applications tested in practice

- Complementary therapy for cancer (especially bowel, breast and prostate cancer) and prevention of tumour disorders²

The conjugated linoleic acids (CLA) contained in the button mushroom are believed to possess anti-carcinogenic properties. The polysaccharides, proteoglycans and steroids act in a similar way, and we already know from scientific studies into other medicinal mushrooms that these substances offer a protective effect against cell degeneration.

- Protection and support of liver health¹

One study showed that the button mushroom possesses a protective effect against fatty liver disease. The relevant markers in the blood normalised and the lipometabolism showed better values overall. The detoxifying effect of the liver is promoted.

- Support for healthy wound healing and prevention of excessive scarring, particularly following cataract and glaucoma surgery on the eye

The button mushroom contains lectin, which can counteract scar formation, and is also very rich in various vital substances, which promote rapid healing of wounds. This is particularly exploited in ophthalmology.

- Regulation of blood fat levels

The substance lovastatin contained in the button mushroom can regulate the cholesterol level in the blood as well as other blood lipid levels and, in this way, protect against heart and vascular diseases. What's more, the mushroom is rich in potassium and also low in sodium – a mineral composition that counteracts high blood pressure.

Special features:

Worldwide, there are presumably 200 different types within the *Agaricus* genus. Most of them are edible but there are also some poisonous types. One example is the yellow-staining mushroom, which grows in parks and deciduous forests and is easy to identify in that the pileipellis and base of the stem stain bright yellow within seconds when rubbed and smell like carboic acid.

Origin:

Widespread in forests, meadows, gardens and steppes in various climate zones. Today, the button mushroom is cultivated almost throughout the world.

¹Protective Effects of White Button Mushroom (*Agaricus bisporus*) against Hepatic Steatosis in Ovariectomized Mice as a Model of Postmenopausal Women, Noriko Kanaya et.al., PLOS one, Published: October 25, 2011 <http://dx.doi.org/10.1371/journal.pone.0026654>

²Extract of white button mushroom affects skin healing and angiogenesis., Lam WP et.al., Microsc Res Tech. 2012 Oct;75(10):1334-40. doi: 10.1002/jemt.22071. Epub 2012 May 12.

Coprinus comatus

Coprinus comatus is an edible mushroom found throughout Europe, which is very popular due to its asparagus-like flavour. At the same time, it is one of the few medicinal mushrooms whose efficacy was not discovered by Traditional Chinese Medicine but instead in Europe. Here, it not only grows in forests and meadows, but often also in gardens and alongside paths. The protein-rich mushroom contains many essential amino acids. Of particular interest is the high level of lectins and L-Ergothioneine. What's more, the mushroom is very rich in minerals and trace elements.

Other names:

Shaggy ink cap, lawyer's wig, shaggy man, shaggy mane, shaggy cap

Applications tested in practice

- Reduction of blood sugar level for diabetes¹.

The main area of application for Coprinus comatus is complementary diabetes therapy. Studies have shown clear improvements in the blood levels after Coprinus is administered. The regulation of the metabolism, resulting in weight loss, has also been observed, and often plays a very important role in diabetes.

- Improvement of blood flow

Coprinus comatus can reduce blood flow disorders and the symptoms associated with these. Due to its high content of organic vital substances, this medicinal mushroom also protects against damage to the vessel walls and arteriosclerosis. Capillary blood flow is promoted.

- Promotion of the metabolism

A comparative study showed that Coprinus comatus exhibits the highest level of lectin activity among edible and medicinal mushrooms. Lectins are complex proteins that positively influence metabolic processes such as cell division, ribosomal protein biosynthesis, the agglutination of cells, and the immune system.

- Complementary therapy for sarcomas and hormone-dependent tumours

Numerous studies indicate that defined Coprinus components are able to block receptor sites for sexual hormones on tumour cells. This enables cell activities by hormone-dependent types of cancer, such as breast cancer or prostate cancer, to be influenced. Coprinus can also inhibit cell growth in sarcomas.

Special features:

Shaggy ink cap distributes itself with the aid of a black fluid in which the spores drop from the cap to the ground. This liquid was previously used as an ink and gave the mushroom its English name.

Origin:

Coprinus comatus mainly grows in Central Europe in forests, gardens and on meadows. The mushroom is cultivated in Asia.

¹Extract of white button mushroom affects skin healing and angiogenesis., Lam WP et.al., Microsc Res Tech. 2012 Oct;75(10):1334-40. doi: 10.1002/jemt.22071. Epub 2012 May 12.

Cordyceps sinensis

Cordyceps sinensis is the medicinal mushroom for the gentle, yet long-term, increase in performance, which can provide freshness and stamina both on a physical and a mental and spiritual level. It is an important toning medicinal mushroom in traditional Chinese medicine, featuring both yin-boosting and yang-promoting properties. Scientific studies have shown an increase in mitochondrial ATP production and thus improved energy generation at a cellular level, in addition to general immune-boosting effects.

Other names:

Caterpillar fungus, yartsa gunbu, dōng chóng xià cǎo, ophiocordyceps sinensis



Applications tested in practice

- Promotion of performance, shortening of regeneration phases and improvement in stress resistance¹

Sportspeople within Asian culture have long been using Cordyceps sinensis due to the energy- and stamina-boosting properties of the medicinal mushroom. Tests have shown both an improvement in stamina and a reduced susceptibility to stress.

- Regulation of fertility and sexual dysfunction disorders

Cordyceps sinensis is traditionally used to promote and increase sexual performance. Studies indicate that there is a positive influence on testosterone production. Cordyceps supplements can also significantly improve semen quality with regard to sperm mobility and morphology, as well as the amount of semen.

- Cell protection, anti-ageing and boosting the immune system²

Cordyceps sinensis contains a variety of antioxidant substances that inactivate free radicals and protect the organism from cellular damage. The efficacy in inhibiting ageing processes has been documented. The immune system also benefits from protection against oxidative stress.

- Brightening people's moods

This medicinal mushroom has made a name for itself as a tonic against exhaustion, depression and stress. Scientific studies have successfully shown that Cordyceps extracts have a direct influence over the production of adrenalin and dopamine, although they do not affect serotonin mechanisms

Special features:

Cordyceps sinensis is traditionally valued as a natural aphrodisiac and to generally boost performance.

Origin:

Cordyceps sinensis does not grow on plant-based substrates like other fungi, but instead grows exclusively on a particular type of Tibetan Plateau larva, which it attacks under the ground. Today, the rare and valuable mushroom is also cultivated.

¹Effect of Cs-4 (Cordyceps sinensis) on Exercise Performance in Healthy Older Subjects: A Double-Blind, Placebo-Controlled Trial, Steve Chen, M.D. et al., *The Journal of Alternative and Complementary Medicine*, Volume 16, Number 5, 2010, pp. 585–590 Mary Ann Liebert, Inc. DOI: 10.1089/acm.2009.0226

²Antiaging Effect of Cordyceps sinensis Extract, Deng-Bo Ji et al, *Phytotherapy Research* 23, 116–122 (2009), Published online 19 September 2008 in Wiley InterScience (www.interscience.wiley.com) DOI: 10.1002/ptr.2576

Coriolus versicolor

While *Coriolus versicolor* has already been used in traditional Chinese medicine for centuries and holds a firm place in South American folk medicine, its application as a medicinal mushroom in Europe is still in its infancy. With a notably high content of the mushroom-specific polysaccharides PSK and PSP, the medicinal mushroom can be used well for viral infections, but above all as a complementary treatment for cancers. Very recent scientific research has been able to demonstrate this in an impressive manner.

Other names:

Trametes versicolor, Coriolus versicolor, Yun zhi, kawaratake, turkey tail, bracket fungus

Applications tested in practice

- Prevention and complementary treatment for tumour disorders

Coriolus versicolor can effectively prevent the growth of cancer cells and bring about cellular death (apoptosis) via mitochondrial processes for existing tumour cells. This has been demonstrated in numerous studies (in vitro and in vivo) using human leukaemia cells.

- Improvement in the tolerability of chemotherapy and radiotherapy¹

The polysaccharides contained in *Coriolus versicolor* are effective immunostimulants. They can help make sure the body's own defences are supported optimally during conventional medical tumour therapy. What's more, the suppression of haematopoiesis and the damage to the mucous membranes are reduced.

- Boosting the body's defences, especially against viral infections²

Based on the results of numerous studies, it is assumed that *Coriolus versicolor* has an activating effect on the body's own immunocytes, such as leukocytes, lymphocytes and natural killer cells. Immunomodulation through *Coriolus* supplements can be seen in both healthy people and those suffering from illnesses.

- Support for liver function disorders

It has been possible to show that damaged liver cells are revitalised and there is a significant reduction in symptoms for various hepatitis illnesses as well as cirrhosis of the liver when taking *Coriolus versicolor* for liver function disorders.

Special features:

The immunostimulants in *Coriolus* are highly valuable both to defend against infections and to protect against tumour disorders. In Asia, it is often used alongside conventional medical cancer treatment.

Origin:

Coriolus versicolor is spread almost throughout the world and is also native to Germany.

¹Phase 1 Clinical Trial of *Trametes versicolor* in Women with Breast Cancer, Carolyn J. Torkelson et. Al. International Scholarly Research Network ISRN Oncology Volume 2012, Article ID 251652, 7 pages doi:10.5402/2012/251652

²Antiviral activity of Basidiomycete mycelia against influenza type A (serotype H1N1) and herpes simplex virus type 2 in cell culture., Krupodorova T., Rybalko S, Barshteyn V., *Virologica Sinica*. 2014 Oct; 29(5):284-90. doi: 10.1007/s12250-014-3486-y. Epub 2014 Oct 24.

Enoki

The significance of Enoki as a medicinal mushroom has been increasing continuously since a Japanese study was able to show that the cancer rate among Enoki growers was significantly lower than that of the normal population. Enoki is assumed to be one of the first edible mushrooms to ever be cultivated in a targeted manner. Its cultivation can be dated back to the late Chinese Tang dynasty in the years 800 to 900. Its simple cultivation also makes it attractive for research. The influence of gravity on the growth of Enoki was investigated as part of the Spacelab mission D2 in 1993.

Other names:

Flammulina velutipes, Collybia velutipes, Enokitake, velvet foot, winter mushroom

Applications tested in practice

- Improvement in the tolerability of chemotherapy and radiotherapy

The immunomodulating properties of Enoki strengthen an organism, which is placed under particular strain due to conventional medical tumour therapy. Improved tolerability of the treatment and also protection against further cell changes can be achieved by the antioxidant components.

- Immunomodulation for allergies and infections¹

Among other things, Enoki stimulates interferon gamma production, which is of great importance for the immune response of the organism. It is worth noting the modulating effect on the immune system. Enoki can thus be used to protect against infections as well as for excessive defence reactions (for instance, allergies).

- Chronic fatigue syndrome

As a revitalising mushroom with a high polysaccharide content, Enoki can also be used for chronic fatigue syndrome, which can occur as an accompanying symptom of other illnesses.

Special features:

Enoki is a very widespread edible mushroom, especially in Japanese cuisine. In Europe, too, experts have a high regard for the mushroom, which primarily grows in winter on tree stumps, tree trunks and the fallen branches of deciduous trees.

Origin:

Enoki can be found in all temperate and cold regions of the Northern Hemisphere, but also in Australia.

¹Activation Effects of Polysaccharides of *Flammulina velutipes* Mycorrhizae on the T Lymphocyte Immune Function, Zheng-Fei Yan et.al., *Journal of Immunology Research* Volume 2014, Article ID 285421

Heridium erinaceus

Heridium erinaceus has been prized for centuries due to its regulating effect on the human body and mind. This mushroom, which grows on the wounds of older or dead standing broad-leaved trees, is also particularly treasured in Asia as a delicacy thanks to its fine flavours. Cultivation began in Shanghai in the 1950s, and the fungus is now also grown in our part of the world. The substances contained have been researched extensively and the nutritional properties have been confirmed scientifically. The mushroom contains all eight of the essential amino acids that humans need.

Other names:

Lion's mane mushroom, bearded tooth mushroom, hedgehog mushroom, satyr's beard, bearded hedgehog mushroom, pom pom mushroom, bearded tooth fungus, yamabushitake, houtou

Applications tested in practice

- Regulation of stomach and bowel problems¹

Heridium possesses significant potential for action in the digestive system, can soothe, alleviate inflammatory processes and promote regeneration. In gastritis patients, studies have shown that the development of mucous membrane structures improved when Heridium supplements were taken.

- Prevention of tumour disorders, especially stomach, bowel, oesophageal and skin cancer

Defined water-soluble polysaccharides from Heridium exhibit exceptionally anti-carcinogenic and anti-metastatic properties. They increase the activity of macrophages and other immunocytes with regard to cancer cells and appear to be able to limit metastasis formation.

- Complementary therapy for nervous disease²

The components of Heridium are able to promote the regeneration of nerve cells and the growth of nerve fibres. This makes the use of this medicinal mushroom particularly interesting for Alzheimer's disease, Parkinson's disease and multiple sclerosis.

- Soothing anxieties, uneasiness and sleep disorders

Studies have successfully demonstrated that Heridium can have a positive effect on mental complaints such as depressive moods, sleep disorders, nervousness and stress-related ailments. The natural, healthy balance of the psyche is promoted.

- Modulation of the immune system

The components of Heridium can increase the proliferation of T- and B-lymphocytes. This strengthens the immune system in general and increases the body's own defences against antigens.

Special features:

According to the teachings of traditional Chinese medicine, Heridium helps to bring the stress and unhealthy lifestyle of the unsettled organism back into a natural, healthy balance.

Origin:

Heridium is spread almost throughout the world and is also native to Europe, but is generally rarely found growing wild.

¹Gastroprotective Effects of Lion's Mane Mushroom *Heridium erinaceus* (Bull.:Fr.) Pers. (Aphyllophoromycetidae) Extract against Ethanol-Induced Ulcer in Rats, Jing-Yang Wong et al., Evidence-Based Complementary and Alternative Medicine Volume 2015, Article ID 492976, 9 pages <http://dx.doi.org/10.1155/2015/492976>

²Compounds for dementia from *Heridium erinaceum*, Kawagishi, H., Zhuang, C., *Drugs of the Future*, 2008, 33(2): 149 ISSN 0377-8282

Maitake

According to legend, collectors in Japan did a dance of joy when they discovered the Maitake mushroom. Thanks to its healing powers, the fungus was considered very valuable, and, as its cultivation was only begun in the 1980s, people had to rely solely on being lucky enough to find it in the woods. The antioxidant power of the polysaccharides contained in Maitake is noteworthy. However, Maitake is used not only for human health but also as an aromatic supplement to a wide range of dishes. It is now among the most popular edible mushrooms of all.

Other names:

Grifola frondosa, ram's head, sheep's head, hen-of-the-woods, kumotake



Applications tested in practice

- Boosting the immune system¹

Maitake contains the beta-glucan grifolan, which can increase the activity of macrophages and thus bring about targeted immune activation. Indications of the antiviral properties of this medicinal mushroom in hepatitis, among other things open up new concomitant possibilities.

- Prevention of and complementary therapy for breast, lung, liver, pancreatic and prostate cancer

Various components of Maitake play a key role in tumour prevention. In studies, Maitake exhibits an inhibiting effect on the production and reproduction of tumour cells in vitro and in vivo. What's more, analyses show that Maitake increases the activity of immunocompetent cells during conventional medical tumour therapy.

- Anti-diabetic effects²

Tests have shown that a glycoprotein specific to Maitake can increase glucose tolerance without affecting insulin secretion. A blood sugar-reducing effect has also been documented. Maitake can also be used well in a preventative capacity if there is a risk of diabetes.

- Support for the skeletal system in osteoporosis

Maitake contains the vitamin D precursor ergosterol and thus create an important prerequisite for incorporating calcium from the food into the bones. This medicinal mushroom can also be used preventatively for bone health.

- Weight and blood pressure regulation

By influencing the renin-angiotensin system, Maitake can be used to reduce high blood pressure values. What's more, the mushroom can reduce the storage of fat in tissue, thus promoting weight loss.

Special features:

With its ability to regulate body weight and blood pressure and reduce high blood sugar and blood lipid levels, Maitake is an important helper in combatting metabolic syndrome.

Origin:

Maitake grows in East Asia, Europe and North America. It is now cultivated in many countries as an edible and medicinal mushroom.

¹Immune-enhancing effects of Maitake (*Grifola frondosa*) and Shiitake (*Lentinula edodes*) extracts, Vaclav Vetvicka, Jana Vetvickova, *Annals of Translational Medicine*, Vol 2, No 2 (February 2014)

²Submerged culture mycelium and broth of *Grifola frondosa* improve glycemic responses in diabetic rats., Lo HC, Hsu TH, Chen CY, *The American Journal of Chinese Medicine*. 2008;36(2):265-85.

Pleurotus ostreatus

It is the world's most important edible mushroom, even ahead of the button mushroom: *Pleurotus ostreatus*, better known as the oyster mushroom, is, however, not only used as an ingredient but also as a health-promoting dietary supplement. It is rich in various vitamins and antioxidants, can strengthen the nervous system and protect the cells, as well as have a positive influence on the cholesterol metabolism. The oyster mushroom provides all of the amino acids that are important for humans, which are essential for the development of protein structures and take on key roles in the metabolism.

Other names:

Tree oyster mushroom, oyster mushroom, ping gu, oyster shelf, grey oyster mushroom



Applications tested in practice

- Protection against free radicals¹

The extract of *Pleurotus ostreatus* can reduce oxidative stress and contribute to protecting the body's cells. It possesses a positively increasing effect on the enzyme catalase, which is responsible for converting hydrogen peroxide into oxygen and water, and thus frees the body from the oxidative substance.

- Reduction of blood lipid levels²

The positive effect of this medicinal mushroom on the cholesterol metabolism, on triglycerides, LDL and phospholipids is above all attributed to the substance lovastatin. In contrast, there were no detrimental effects on other blood parameters, which often occur with other medications to regulate blood lipids.

- Support for weight loss

Pleurotus ostreatus can promote weight loss. This effect should not be underestimated, particularly in connection with blood lipid regulation, as obesity itself is a major risk factor for various illnesses such as diabetes and constrictions of the coronary arteries.

- Tumour-inhibiting effect

Pleurotus ostreatus can be used both therapeutically and preventatively with good success for tumours and, according to an American study, particularly for breast cancer and bowel cancer. The mushroom can significantly suppress the proliferation of mutated cells without any negative influence on the surrounding healthy cells.

Special features:

With sufficient humidity, oyster mushrooms can grow easily by themselves from spawn on bales of straw. Good spawn can be purchased from specialised providers, who also provide instructions for cultivation. Fresh oyster mushrooms are a delicacy, but cannot replace a targeted dietary supplement, as provided by medicinal mushroom extract.

Origin:

Distributed almost all over the world on tree trunks or thicker branches of deciduous and coniferous trees.

¹Amino acids and antioxidant properties of the oyster mushrooms, *Pleurotus ostreatus* and *Pleurotus sajor-caju* Pornariya Chirinang, Kanok-Orn Intarapichet, *ScienceAsia* 35 (2009): 326–331

²Hypolipidemic and antiatherosclerotic potential of *Pleurotus ostreatus*, cultivated by submerged fermentation in the high-fat diet fed rats, Leandro Freire dos Santos et al., *Biotechnology and Bioprocess Engineering* February 2013, Volume 18, Issue 1, pp 201–208

Polyporus umbellatus

Polyporus umbellatus is thought to have been used as a traditional antibiotic for more than 1000 years. Its antibacterial effect proved itself of use for both wound disinfection and for general strengthening. The glacial mummy Ötzi carried a birch polypore related to Polyporus to protect against infections. This mushroom is also known as a diuretic substance that regulates lymph flow. Certain substances, which play a key role in new hair growth as bioactive components, are meeting with great interest within the scientific community.

Other names:

Lumpy bracket, Grifola umbellata,
Umbrella polypore, chuling, zhuling, zhu ling, chorei



Applications tested in practice

- Modulation of the immune system¹

The polysaccharides and, specifically, certain triterpenes in Polyporus umbellatus display a strong antioxidant effect. This makes the mushroom interesting both for general immunomodulation as well as for targeted support of the defences in particularly stressful times of life.

- Promoting drainage²

The Polyporus component ergon is documented to have a diuretic effect. This substance is an aldosterone antagonist and in this way ensures increased water excretion, without the body losing a large quantity of potassium at the same time.

- Regulating the blood pressure

Maitake particularly has a positive influence on diastolic blood pressure. A blood pressure-lowering synergy effect can be achieved by additionally taking Reishi and Maitake. Heart function is supported.

- Improvement in hair growth and the structure of the skin

Special Polyporus components are presumably able to stimulate the new growth of hair and extend the hair growth phase. This medicinal mushroom is thus chosen when increased hair loss is present or feared.

- Support as part of cancer prevention and treatment

Various studies confirm the anti-tumoral effect of Polyporus in the development and recurrence of tumours. The medicinal mushroom can also be used preventatively with its cell-protecting properties.

Special features:

In mycotherapy, it is not the fruiting body of this mushroom but rather the compact, woven mycelium mass found under the surface of the ground, called the sclerotium, that is used. The substances contained in it are in a particularly high concentration.

Origin:

Polyporus umbellatus grows in temperate climate zones in Europe and Asia.

¹Structure elucidation and immunological function analysis of a novel β -glucan from the fruit bodies of Polyporus umbellatus (Pers.) Fries, Hui Dai et.al, Glycobiology Vol. 22 No. 12 pp. 1673–1683, 2012 doi:10.1093/glycob/cws099, Advance Access publication on June 18, 2012

²Bioactivity-directed isolation, identification of diuretic compounds from Polyporus umbellatus, Ying-yong Zhao et.al., Journal of Ethnopharmacology Volume 126, Issue 1, 29 October 2009, Pages 184–187

Reishi

Legend has it that Reishi, whose name means 'Mushroom of Immortality', has been used in Asia as a natural remedy for around 4000 years. In traditional Chinese medicine, it is considered one of the most effective ways of strengthening the human body as a valuable mushroom to promote vitality and a long life. Many of its traditional effects have since been proven in scientific studies. Its components include polysaccharides and antioxidants, which are known to boost the defences and protect the cells.

Other names:

Lingzhi, Ganoderma lucidum

Applications tested in practice

• Boosting the immune system¹

The immune-strengthening and modulating properties of Reishi are mainly attributed to the high concentration of antioxidant beta-glucans it contains. According to studies, they can improve the proliferation of T- and B-lymphocytes and stimulate the body's defences.

• Promotion of the physical and mental constitution

Many studies show that the regular consumption of Reishi can boost performance and protect against premature exhaustion. With the harmonising properties of its components, Reishi is also used to gently regulate sleep disorders.

• Complementary cancer therapy

The polysaccharides in Reishi exhibit a broad spectrum of not only immunomodulating but also anti-tumour effects. They have a proven cytotoxic effect on cancer cells, improve macrophage proliferation and stimulate their activity against tumour cells.

• Promotion of the heart and circulation

It has long been known that Reishi can protect against arteriosclerosis. In addition to promoting the normalisation of blood fat values and controlling the cholesterol level, the antioxidant properties also have a positive effect on the health of the heart and blood vessels.

• Anti-aging²

In various studies, it has been possible to show that the components of Reishi can minimise age-related damage to various organs and, for instance, also counteract premature skin aging.

Special features:

The hard, stringy Reishi is hardly used as an edible mushroom. However, as a powder, extract (also in liquid form) or tea, the balancing medicinal mushroom is now also very widespread in Germany.

Origin:

Reishi is distributed almost worldwide, and is also native to Europe. It has been cultivated in Asia for several decades.

¹Immunomodulatory effect of ganoderma lucidum polysaccharides (GLP) on long-term heavy-load exercising mice., Shi Y , Cai D, Wang X, Liu X., *International Journal for Vitamin and Nutrition Research*. 2012 Dec; 82(6):383-90. doi: 10.1024/0300-9851/a000135.

²Free-radical scavenging and mitochondrial antioxidant activities of Reishi-Ganoderma lucidum (Curt: Fr) P. Karst and Arogyapacha-Trichopus zeylanicus Gaertn extracts., Cherian E et.al., *Journal of Basic and Clinical Physiology and Pharmacology* 2009;20(4):289-307.

Shiitake

Shiitake was mentioned in traditional Chinese medicine texts as far back as 2000 years ago, and the early beginning of its cultivation in 1000 A.D. is a clear sign of the high value attached to this mushroom. Also known as “king of the mushrooms”, Shiitake not only remains an important means of promoting health to this day, but it is also the second most popular edible mushroom, after the button mushroom. Its component lentinan is one of what’s known as the biological response modifiers, which are efficient stimulators within the immune system.

Other names:

Shii-take, Lentinula edodes, Chinese black mushroom, shaingugu, hua gu, qua gu, dried mushroom, forest mushroom, oak mushroom, oakwood mushroom

Applications tested in practice

- Boosting the immune system¹

Shiitake components display pronounced antimicrobial effects for abnormal bacterial colonisation of the intestine, the bowel-related immune defence mechanism is strengthened. The growth of probiotic bifidobacteria and lactobacteria is not affected by Shiitake, so it can also be taken to cleanse the bowel.

- Support in overcoming bacterial and viral infections²

The Shiitake component lentinan improves the distribution of immunoglobulin IgA on the surface of the mucous membrane, boosts the formation of T cells, and intensifies the cytotoxic effect of macrophages against pathogenic germs. The benefit of this medicinal mushroom lies in overcoming infection.

- Regulation of the lipometabolism

The Shiitake substance eritadenine’s inhibiting influence over the linoleic acid metabolism in the liver cells could be responsible for the cholesterol-reducing effect observed. However, the triglyceride content in the blood is not altered by eritadenine.

- Prevention of and complementary therapy for osteoporosis and rheumatic illnesses³

Shiitake is rich in minerals and vitamins, which are important among other things for the healthy functioning of joints and connective tissue. The cartilage structures benefit in particular from the amino acids contained. Shiitake provides plenty of vitamin D for a good calcium supply to the body.

Special features:

Shiitake has generated interest in conventional medicine with its component lentinan. This polysaccharide is used with great success in the complementary treatment of tumour disorders.

Origin:

Shiitake grows wild exclusively in Asia and is a popular edible mushroom there. Today, it is cultivated almost worldwide.

¹Consuming *Lentinula edodes* (Shiitake) Mushrooms Daily Improves Human Immunity: A Randomized Dietary Intervention in Healthy Young Adults., Dai X et.al., *Journal of the American College of Nutrition* 2015 Apr 11:1-10.

²Polysaccharide and extracts from *Lentinula edodes* : structural features and antiviral activity, Vinicius Pires Rincão et.al., *Virology Journal* 2012, 9 :57

³Dietary calcium and vitamin D2 supplementation with enhanced *Lentinula edodes* improves osteoporosis-like symptoms and induces duodenal and renal active calcium transport gene expression in mice, Geun-Shik Lee et.al., *European Journal of Nutrition*(2009) 48:75–83

Frequently asked questions relating to medicinal mushrooms and their answers

Do medicinal mushrooms have side effects?

Side effects virtually never occur in mycotherapy. Occasionally, there are reports of slight changes in digestion, which are due to the fibre and the hard-to-digest mushroom proteins. By taking a reduced dose, one gives the body the opportunity to slowly get used to the mushrooms.

In individual cases, it is also possible that people with food allergies may have allergic reactions when taking medicinal mushrooms. With Shiitake, itchy skin rashes have been observed in people with a corresponding disposition. In this extremely rare case, one should refrain from the continued consumption of Shiitake and switch to another medicinal mushroom.

How do I find the medicinal mushroom that is right for me?

You can find an overview of what mushroom is effective for what indication in this brochure. As each person reacts in their own way, you should seek the advice of a mycotherapist if you are unsure as to which mushroom is the right one for you.

When and how should mushroom products be taken?

Ideally, take the preparations with plenty of water with or after a meal. It is possible to divide the daily dose into two or three portions. Standard therapy takes three to six months. Naturally, this also depends on how long your symptoms have existed and whether treatment is supported with other measures, such as a change in diet. It is important not to immediately discontinue the mushrooms after the first signs of recovery but instead to continue taking them for at least a few more weeks in order to stabilise the physical condition.

How quickly can I expect the first success?

Often, the first noticeable alleviation in existing symptoms takes place within a few days of taking the mushrooms. However, in the case of chronic conditions, it can take six to eight weeks until the first effects are noticeable.

Can I also take a combination of different medicinal mushrooms?

Medicinal mushrooms support each other's effect, so it is worthwhile in many cases to take a combination of various mushrooms – however, this combination should not include more than five types of mushroom. As a rule, the dosage recommendation has to be adapted on an individual basis.

Can I also take medicinal mushrooms during chemotherapy?

Especially during such arduous treatment, you benefit greatly from support from certain medicinal mushrooms. Ideally, you should begin taking medicinal mushrooms before chemotherapy in order to keep the side effects of conventional treatment at a low level. Please consult your therapist about this.

Are medicinal mushrooms also suitable for children?

Yes, in children, success for instance in atopic dermatitis as well as other illnesses is often outstanding. The child's organism often reacts especially well as there are no or hardly any existing conditions. Usually, a slowly increasing dose is to be recommended as the digestive system is still sensitive and the mushrooms may lead to unpleasant flatulence.

Are mushrooms from China not as good?

No. As a rule, the knowledge concerning cultivation methods, correct harvesting, gentle drying processes, etc. in China and Asia is far greater than elsewhere. If the products constantly undergo analyses, there is no reason to have concerns. Neither cultivation in Germany nor an organic seal can provide evidence of good quality.

Indication table

	Agaricus blazei Murill	Auricularia	Chaga	Champignon	Coprinus	Cordyceps	Coriolus	Enoki	Hericium	Maitake	Pleurotus	Polyporus	Reishi	Shiitake
Allergies	XXXXX					X	X	XX	XX			X	XXXXX	
Anxiety					X	XXXX			XXXXX				XXXX	
Arteriosclerosis		XXXXX			X	X				X			XXX	X
Osteoarthritis	XX					XXXX				X		X	XXXX	XX
Respiratory diseases	X					XXXXX	XXXX	XX					XXXXX	
Eye diseases	XXXX	XXXX											XXX	
Autoimmune disorders	XXXX	XX				XX	X		XX	XX		X	XX	XX
Cystitis	XX	XX			X	XXX	XXXX			X		XXXX	XX	XX
Blood pressure regulation	X	XX		XX	XX	XXX				XXX	XX	XXX	XXX	XXX
Borreliosis						XXXX	XXXXX						XXX	XXX
Burnout-Syndrom						XXXXX			XXXX				XXXX	
Chronic acidosis						XXXX		XX	XXXXX				XXXXX	
Bowel problems		X	XX	XXX	XXX		XXX		XXXXX	XX	XXX		XXX	XXX
Dementia									XXXX				XXXXX	
Depressive moods						XXX			XXX				XXXX	
Diabetes	XXXX				XXXX		X			XXXX			X	X
Circulatory problems		XXXX											XXX	XXX
Detoxification	XXXX					XXX				XXXXX			XXXX	
Colds	XX					XXXX	XXX	XX	X				XX	XX
Fat metabolism disorders		XXX				X				XXXXXX	XXXX		XXXXX	XXXXX
Gout													XXXX	XXXXX
Hair loss		X				XXXX						XXXX	XX	

This table serves to provide some initial assistance. You should discuss the actual use of medicinal mushrooms for the various illnesses in a personal consultation with your alternative practitioner, therapist or a mycotherapist.

The X to XXXXX information relates to the experienced data from real-life practice for mycotherapists and alternative practitioners. One X means that the corresponding medicinal mushroom is used on an individual basis that depends significantly on the individual disease pattern. The greater the number of Xs, the more evidence there is of usage in practice.

Indication table

	Agaricus blazei Murriil	Auricularia	Chaga	Champignon	Coprinus	Cordyceps	Coriolus	Enoki	Hericium	Maitake	Pleurotus	Polyporus	Reishi	Shiitake
Skin diseases	XXXX	XXXX	XXX			XXX	XXX		XXX			XXX	XX	
Cardiovascular disease	XX	XXXXX			XX	XXXX				XXX			XXXXX	XXXXX
Immunodeficiency	XXXX			XXX		XX	XXXX	XX			XX	X	XXX	XXX
Headache	XX	XXX				XX			X	XX			XX	XXX
Libido disorders	X	X				XXXXX							XXX	
Stomachproblems			XX			XX	X		XXXX	XX	XXX		XXXX	XX
Menstrual problems		X				XXXX							XXX	
Multiple sclerosis	XXXX								XXXX				XXXXX	
Nervousness						XX			XXX				XXXX	X
Neurological disorders	XX					XXX			XXXXX				XXXXX	
Kidney disease						XXXX	XXXXX							
Osteoporosis										XXXXXX			XX	XXX
Prostate disease	XXX			XXX		XX	XX			XXXX		XX	XX	XX
Rheumatic diseases	XXX	XX				XX	XX					X	XXXXX	X
Thyroid diseases	XXX					XXX							XX	XXX
Pain (chronic)			XX			XXX							XXXX	
Thrombosis		XXXXX				XX							XXXX	XX
Tinnitus		XXX				X							XXX	X
Tumour disorders (cancer)	XXXX	XXX	XX	XXXX	XXX	XXXX	XXXX	XXX	XXXX	XXXX	XXX	XXX	XXXX	XXXX
Being overweight	X		XX	XX	XX	XX			XXXX	XXXX	XXX	XXX	XX	X
Digestive problems					XX		XXXX		XXXX		XXXX		XXXX	XXXXX
Menopause symptoms		X				XXXX			XXXX				XXXXX	

This table serves to provide some initial assistance. You should discuss the actual use of medicinal mushrooms for the various illnesses in a personal consultation with your alternative practitioner, therapist or a mycotherapist.

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Information brochure

Medicinal mushrooms for chronic diseases

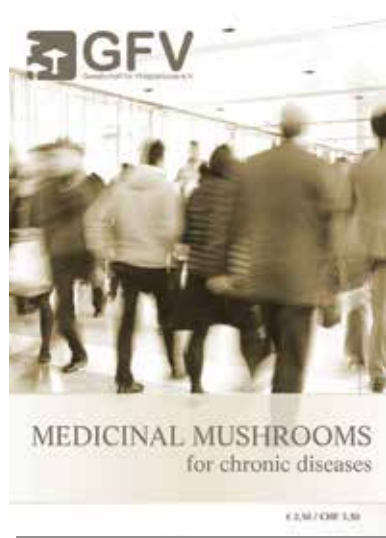
The life expectancy of people living in developed countries has increased massively in recent decades, and many illnesses that used to be feared can now be treated with modern medicine. This does not mean, however, that illnesses overall are on the decline. On the contrary: chronic diseases, from diabetes via high blood pressure to arthrosis are affecting more and more people - especially, but not restricted to, the older generation. They are rightly also referred to as lifestyle (or civilisation) diseases, because modern living conditions constitute a major factor in causing them.

In many cases, the possibilities for treatment with orthodox medicine have not been satisfactory; it has been able to reduce the symptoms, but has not provided a lasting cure. An important step on the road to successful treatment involves perceiving this group of diseases in a holistic way. Even if only one organ system appears to be affected, factors such as deficiencies, underlying inflammation processes and physical stress can also play an important role.

This brochure presents the most frequently occurring lifestyle diseases of our time, and demonstrates the possible applications of mycotherapy, namely supporting the body with medicinal mushrooms, as part of holistic treatment. We decided consciously not to deal with cancer, which is also to a certain degree a lifestyle disease. Given the complexity, the great challenges involved with treatment, and the special opportunities that medicinal mushrooms offer as complementary therapy, we plan to bring out a specific brochure to deal with cancer.

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Please note the following:

The information in this brochure reflects current knowledge and has been thoroughly researched. No liability may, however, be assumed for the statements and treatment recommendations made here. Please consult a therapist or doctor with experience in medicinal mushrooms. He or she will be able to judge which mushrooms and which dose are suitable for you.

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