



mycotrition

MUSHROOMS ARE OUR PASSION

QUALITY CHECK

NOT ALL MEDICINAL MUSHROOMS ARE EQUAL



**QUALITY
CONTROLLED
IN GERMANY**
★★★★★



Non-EU Agriculture
AT-BIO-402
DE-ÖKO-003

There are considerable differences in the quality of medicinal mushroom, which are not always immediately apparent. At mycotrition, we rely on decades of experience and produce in the highest quality. So it is worth taking a closer look at the quality criteria.

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1. Cultivation in harmony with nature and traditional chinese medicine (TCM)



1.1 Cultivation in untouched nature

China is the cradle of medicinal mushrooms and the traditional Chinese medicine (TCM).

Besides optimal climatic conditions, our farmers have thousands of years of knowledge about TCM-compliant cultivation. Pure air and clean water are important prerequisites for healthy mushroom growth. The premium medicinal mushrooms from mycotrition are cultivated in the unspoilt nature of the Chinese highlands, far away from cities and conurbations.

! At mycotrition, Reishi, Shiitake and others grow in their original habitat and fully develop their valuable components. Our medicinal mushrooms grow in optimal natural conditions. Of course, without the use of any substances such as pesticides. Harvested and sorted by experienced hands, only the best fruiting bodies make it to your products.

1.2 Growing material and culture medium

The cultivation of mushrooms begins with the careful production of substrates. A substrate is a culture medium of any kind. In general, the growing material can consist of wood, wood shavings, straw, or cereals such as millet or rice and even sawdust.

When selecting the culture medium, mycotrition draws on thousands of years of traditional knowledge in Asia. This ensures that the perfect culture medium (substrate) can always be found for every different type of mushroom. For use as a substrate, it is sterilised under heat, cut

up and manually filled into a protective casing. This means that the use of pesticides can be completely dispensed with while the mushrooms are growing.

In this way, the medicinal mushroom can grow in optimum conditions and develop the vital substances that are important for us humans. This ancient traditional knowledge is indispensable and an important quality criterion when buying medicinal mushrooms.



! We do not recommend using blended products. If substrates such as millet, rice or cereals are processed, quality suffers. These products consist largely of starch or growing material. Mycotrition products do not contain any substrate: with us, you receive valuable ingredients without any unwanted by-products.



1.3 Full time to ripen

Like good wine or delicious cheese, medicinal mushrooms need sufficient time to ripen to full maturity. Different types of mushrooms need different lengths of time for the valuable fruiting body to fully develop. Shiitake takes around five months and Reishi even eight months to ripen its full fruiting body. This is a ripening period that not every supplier of medicinal mushrooms allows his products to complete.

1.4 Indispensable experience

When it comes to cultivation, we at mycotrition rely on long-term partnerships with audited local partners. It is a trusting, long-term cooperation that pays off in terms of quality. Thanks to regular visits and continuous communication, the knowledge of the local traditional farmers flows into the premium medicinal mushrooms as an invaluable asset. Partnership is an important quality criterion when buying medicinal mushrooms. Mycotrition does not buy raw material on the open market.

The medicinal mushrooms are planted and cultivated by families in which knowledge of the optimal growing conditions has been perfected and passed down for generations.



In the Chinese highlands, the medicinal mushrooms thrive in perfect climatic conditions in their natural habitat. All of the important, mushroom-typical components, such as polysaccharides and beta-glucans, can thus develop optimally.

A study from North America, among others, shows that products from the Chinese highlands perform better than products from countries that have no tradition in the production of TCM medicinal mushrooms. According to this study, the ingredients of a majority of medicinal mushroom products manufactured in the USA (in comparison to the reference mushrooms from the country of origin China) do not meet the declared quality standards³.



³<https://www.nature.com/articles/s41598-017-06336-3>

2. Our 3-step-quality-check

2.1 Components and analysis

Not all suppliers are able to check or correctly declare the active ingredients (such as polysaccharides) in the final product. At mycotritition, we can provide evidence of ingredients with unique analytical methods that have been developed over 20 years with a great deal of dedication and passion.

! Our components, such as polysaccharides, are analysed and confirmed by a pharmaceutical GMP-certified laboratory from Germany.

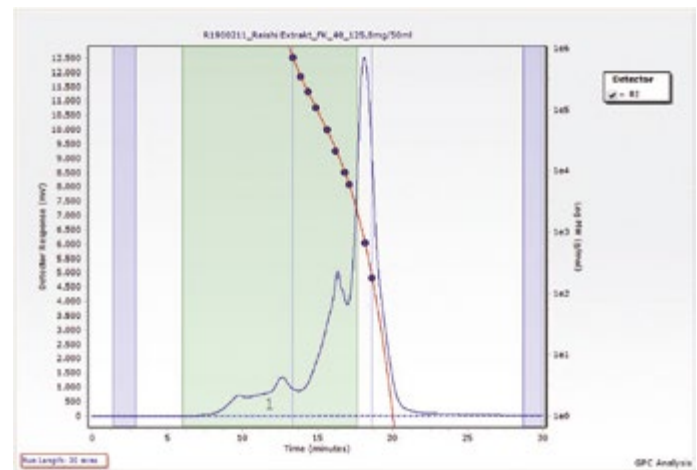
Our incoming goods inspection takes place within a organic and ISO-certified environment and exceeds the requirements for dietary supplements. All raw materials are also subjected to an SEC identity test (our so-called fingerprint). This ensures that the specified mushroom type has actually been processed. We can assure that our reishi extract is a reishi extract and not a reishi powder or that it is indeed reishi extract and not a different mushroom extract.

Among the medicinal mushroom suppliers, we are the only one who practices this method - only a few universities are already working with it.

Another quality criterion is standardisation. Recent analyses show that common medicinal mushroom products are often declared to contain 30% or 40% polysaccharides, but the actual proportion of water-soluble polysaccharides is far below this value. This has less to do with deliberate deception than with a lack of

expertise and a lack of analysis. Unfortunately, such fluctuations are commonplace and make a controllable and thus responsible dosage impossible.

Mycotritition uses the SEC method to measure the amount of polysaccharides.



SEC chromatogram of Reishi extract (blue line) with molecular weight calibration (red line).

The polysaccharide zone is shown in green. The green area below the SEC chromatogram of Reishi extract is a measure of its polysaccharide content.

! Mycotritition guarantees: What is stated on our specification is contained in our products – and nothing else. If you would like to view our quality analyses, we will be happy to send them to you. Absolute transparency is part of our company policy.

More than 40 years experience in the field taught us the following:

- I Scientific studies and analyses available to us show that the information on polysaccharide content is sometimes higher than is actually the case.¹
- II Sometime the stated content of polysaccharides only partly consists of valuable mushroom polysaccharides, the rest of the components come from cereal in the culture medium (substrate).
- III Water-soluble and water-insoluble polysaccharides are often simply added. This is misleading as water-insoluble polysaccharides are not bioavailable and are excreted by the body. In mycotrition's case, the designated proportion of components is always water-soluble and thus bioavailable.

¹Wu et al. 2016. Evaluation on quality consistency of *Ganoderma lucidum* dietary supplements collected in the United States. *Scientific Reports*.

2.2 Purity guarantee

There are great differences in which parts of the mushroom, fruiting body and/or mycelium, enter raw material processing. For many suppliers, the entire mushroom culture, including growing material, ends up in processing and thus in the final product. The growing material used is referred to by the manufacturer using pseudoscientific names such as "extracellular matrix", "full spectrum", "full life cycle" or even "whole mushroom". It is usually only a cheap culture medium injected with mushroom mycelium and made from sawdust, cereal flour, rice, corn or millet. This type of production enables manufacturers to produce mass at low cost. Consumers

are at a disadvantage: instead of purchasing a valuable medicinal mushroom product, they are only buying a blend.

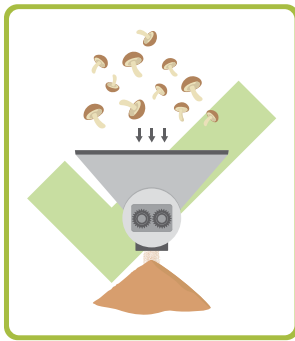
If you look at the production of flour, for example, only the important parts of the ear are harvested and ground, namely the grain and husk, and not the whole plant with the stalk, leaf and soil ball.

We were the first in Europe to tackle the question of what an optimal medicinal mushroom product must be like and have constantly developed our standard to get the best possible raw materials.

! The U.S. Food and Drug Safety Authority (FDA) uses a guideline to prevent what are known as 'MOG – mycelium on grain products' (e.g. mushroom mycelium on a millet or cereal culture medium) from being referred to as mushrooms. This is misleading as these products have a different identity to pure mushrooms (Compliance Policy Guide, Section 585.525)².

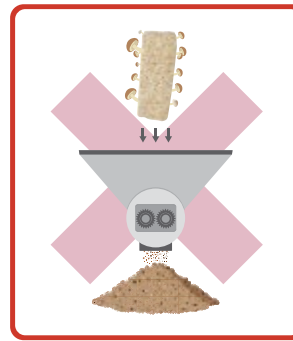
²<https://www.fda.gov/regulatory-information/search-fda-guidance-documents/cpg-section-2585525-mushroom-mycelium-fitness-food-labeling>

Production of pure fruiting body vs. blended products with substrate



 mycotrition

Pure mushroom powder
without growing material



Blended products

Powder blend with up to
80% growing material

Also called / synonyms:
Full spectrum, whole mu-
shroom, extracellular
matrix, full life cycle



According to the EU Novel food catalogue mycelium powder of any mushroom is considered as novel food. Therefore, these products are neither marketable nor salable. The outcome is published on the following commission's link under the latin name of the respective mushroom (e.g. Ganoderma lucidum):

https://ec.europa.eu/food/safety/novel_food/consultation-process_en

According to the EU Novel food catalogue final products only consisting of fruiting bodies are marketable and salable.¹

¹ Some EU member states may restrict the marketing of a product through specific legislation. Therefore, businesses should address their national competent authorities. Mycotrition GmbH cannot provide any legal advice.

2.3 Residue controls

Continuous quality controls accompany our raw materials from the beginning to the end. Shortly after harvesting in China, the mushrooms we use are inspected on site for their purity. Each individual batch is tested for heavy metals, pesticides and other microbiological impurities.

Following arrival in Germany, the state-accredited, certified and independent AGROLAB laboratory group is given samples of every single batch.

There, the samples are tested a second time for pesticides, heavy metals, radioactivity, PAHs (polycyclic aromatic hydrocarbons), EtO (ethylene oxide), arsenic and microbiological impurities. This examination comprises around 250 different parameters. **We have established much stricter control criteria than those set down in the German food law.**

Mycotrition tests indeed each single batch in Germany and does not make occasional residue checks.

If you look at the market of medicinal mushroom suppliers, it can be seen that the quality of medicinal mushroom products varies greatly. So choose your provider wisely.

With the premium medicinal mushrooms from mycotrition, you are always on the safe side.

The result are medicinal mushrooms of the highest quality with a maximum of valuable ingredients.



If you would like to view our quality analyses, we will be happy to send them to you. Absolute transparency has been the foundation of our actions for 40 years.



A sign of reliable quality
at the highest level:
The AGROLAB quality mark



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