



HUMAN PATHOGENS IN POTTING SOIL AND GROWING MEDIA

Human pathogens are micro organisms (e.g. bacteria) that can cause diseases to humans if they come into direct contact with them. Can human pathogens be present in potting soil or growing media and what are the risks?



Human pathogens

There are several types of human pathogens. These are often bacteria, but they can also be fungi. Nevertheless, people usually talk about the bacteria, such as *Salmonella* and *Listeria*. Another well-known bacterial family is *Escherichia coli* (*E. coli*). This family includes mostly harmless species and some species that may pose a risk. Under certain circumstances people, for example with poor health, can become ill by human pathogens when they come into direct contact with them. Hygiene measures, such as those advised when preparing food, can further minimise the risk.

Human pathogens in growing media? Potting soils and growing media often consist of organic products. Human pathogens may sometimes be present in it. Most often, the presence of human pathogens is the result of an external contamination that has occurred. These contaminations can't always be prevented in the production chain. Packaged potting soils are usually slightly less sensitive than unpackaged ones. Under specific conditions, human pathogens can multiply in the packaged product during storage and transport.

What are the guidelines of the RHP quality mark?

All quality requirements of the RHP quality mark are described in the RHP product certification scheme. This concerns both process and product requirements. The requirements of the RHP quality mark are continuously updated, based on the latest developments. Important are the process requirements for hygiene at the production sites. This greatly reduces the risk of pathogens. These requirements are checked during control audits. In addition to process requirements, product guidelines have also been included for human pathogens that are important in relation to food safety. It is tested for: *Salmonella*, *Listeria*, *Campylobacter* and *E. coli*. The RHP guidelines for all products are as follows:

Pathogens*	Target value
Salmonella	0 per 25 grams
Campylobacter	0 per 25 grams
Listeria	0 per 25 grams
E. coli	< 1,000 CFU per grams

* *Enterobacteriaceae* is also tested as an indicator of hygiene.

RHP-certified companies must be able to demonstrate that their RHP-certified products comply with the RHP guidelines with analysis results from an acknowledged laboratory. For this purpose, random product samples are taken immediately after production. This gives the most realistic picture of any presence of human pathogens. After that, there is a chance that potting soil or growing media will be contaminated from the environment. To minimise that chance, RHP-certified companies take control measures until delivery of the product.



Products with a higher level of risk should be sampled more frequently. The analysis results should be seen as monitoring of the production processes. An exceeding of the RHP guidelines should have as a purpose to identify the source and make improvements. This working method further reduces any risks. On the basis of annual risk inventories, it is determined whether the control system is functioning.

A guarantee that human pathogens will never be found in an organic substrate is not possible. Even if sterilisation were to take place, this guarantee can't be given because the production processes often take place in the open air.

Advice for the user

If human pathogens are present in potting soil or growing media, the question is of course what the risk is for humans. After all, potting soil or growing media itself are not eaten. When working with potting soil in a professional greenhouse or in your own garden, some potting soil can remain on the hands. The advice is to wash your hands thoroughly afterwards to minimise any risks.

Potting soil and growing media are used to grow ornamental crops and consumer crops, such as lettuce, basil or strawberries. In very rare cases, human pathogens can be taken up by a plant from the soil. This is called internalisation. It can happen if the concentration of human pathogens is extremely high or if the roots are damaged, although internalisation is very exceptional. There is a greater chance that there are bacteria on the outside of the crop.

Therefore, the advice is to always wash edible crops before consumption. This is the same advice that applies to crops (fruit and vegetables) that are not grown in growing media but come from field cultivation.

- ✓ **RHP-certified products are regularly tested for human pathogens**
- ✓ **production processes are fine-tuned to minimise risks**
- ✓ **wash hands after working with potting soil**