References: Url1.: https://en.wikipedia.org.
Url2.: https://steemit.com.
Url3.: https://courses.lumenlearning.com.

ECONOMIC IMPORTANCE OF FUNGI

Fungi as decomposing agent

Fungi play an important role as decomposing agent along with bacteria.They are responsible for the decomposing of organic material causing decay of dead plants and animals and form the humus.It also involve in the recycling of nutritional elements like nitrogen, phosphorus, potassium, sulphur, iron, calcium released which then utilized by green plants because these elements are essential for the growth of plants. Carbon dioxide also released to the atmosphere during decomposition which is used by the plants in photosynthesis.

Industrial use

The yeasts are taken from fungi which used in baking and brewing industries. Some species of fungi also used in manufacture of certain types of cheese. Another industrial use of the fungi is in the manufacture of citric acid, soft drinks,formic acid and lactic acid.

Fungi as food

Fungi also a great source of food.The mushroom has a great importance as a food material because it is rich source of protein and vitamins and their excellent flavour.But some mushroom are deadly poisonous and cause death .Therefore, one should be careful in selecting mushroom.

Source of enzymes, hormones and vitamins

Many species of fungi are good source of enzymes like amylase and invertase.Similarly fungi are an important source of hormones such as Gibberella fujikuroi is a plant hormone. Vitamins also taken from fungi.

Fungi as research

Fungi used as research tool in the study of fundamental biological processes because it show a faster rate of growth and large number of generations can be grown in a limited time period. Red bread mold Neurospora has proved an ideal organism for the study of laws of inheritance, genetic make up. The slime mold also used for research.

Fungi as symbionts

Fungi also exhibit a symbiotic relationship with green plants.These are main partner of lichens, an association between fungi and algae.These infect of many higher plants to form a symbiotic relation that helps in absorption and retention of moisture.

Source of insecticides

Many fungi play an important role in the elimination of various dreadful disease like malaria.They attack a number of insects that are harmful to crop and in such way play important role in the betterment of economy.

Harmful aspects of fungi

Fungi also has many harmful aspects.The fungi also destructive to plants and animals by causing diseases.Fungi also cause diseases in humans.

Medicine

Many secondary metabolites of fungi are of great commercial importance. Fungi naturally produce antibiotics to kill or inhibit the growth of bacteria, limiting their competition in the natural environment. Important antibiotics, such as penicillin and the cephalosporins, can be isolated from fungi. Valuable drugs isolated from fungi include the immunosuppressant drug cyclosporine (which reduces the risk of rejection after organ transplant), the precursors of steroid hormones, and ergot alkaloids used to stop bleeding. Psilocybin is a compound found in fungi such as *Psilocybe semilanceata* and *Gymnopilus junonius*, which have been used for their hallucinogenic properties by various cultures for thousands of years.

As simple eukaryotic organisms, fungi are important model research organisms. Many advances in modern genetics were achieved by the use of the red bread mold *Neurospora crassa*. Additionally, many important genes originally discovered in *S. cerevisiae* served as a starting point in discovering analogous human genes. As a eukaryotic organism, the yeast cell produces and modifies proteins in a manner similar to human cells, as opposed to the bacterium *Escherichia coli*, which lacks the internal membrane structures and enzymes to tag proteins for export. This makes yeast a much better organism for use in recombinant DNA technology experiments. Like bacteria, yeasts grow easily in culture, have a short generation time, and are amenable to genetic modification.

Mushroom poisoning

Mushroom poisoning refers to harmful effects from ingestion of toxic substances present in a mushroom. These symptoms can vary from slight gastrointestinal discomfort to death in about 10 days. The toxins present are secondary metabolites produced by the fungus. Mushroom poisoning is usually the result of ingestion of wild mushrooms after misidentification of a toxic mushroom as an edible species. The most common reason for this misidentification is close resemblance in terms of colour and general morphology of the toxic mushrooms species with edible species. To prevent mushroom poisoning, mushroom gatherers familiarize themselves with the mushrooms they intend to collect, as well as with any similar-looking toxic species.

Poisonous mushrooms contain a variety of different toxins that can differ markedly in toxicity. Symptoms of mushroom poisoning may vary from gastric upset to organ failure resulting in death. Serious symptoms do not always occur immediately after eating, often not until the toxin attacks the kidney or liver, sometimes days or weeks later. The most common consequence of mushroom poisoning is simply gastrointestinal upset. Most "poisonous"

mushrooms contain gastrointestinal irritants that cause vomiting and diarrhea (sometimes requiring hospitalization), but usually no long-term damage.

The period of time between ingestion and the onset of symptoms varies dramatically between toxins, some taking days to show symptoms identifiable as mushroom poisoning.

Alpha-amanitin: For 6–12 hours, there are no symptoms. This is followed by a period of gastrointestinal upset (vomiting and profuse, watery diarrhea). This stage is caused primarily by the phallotoxins and typically lasts 24 hours. At the end of this second stage is when severe liver damage begins. The damage may continue for another 2–3 days. Kidney damage can also occur. Some patients will require a liver transplant. Amatoxins are found in some mushrooms in the genus Amanita, but are also found in some species of Galerina and Lepiota. Overall, mortality is between 10 and 15 percent. Recently, Silybum marianum or blessed milk thistle has been shown to protect the liver from amanita toxins and promote regrowth of damaged cells.

Orellanine: This toxin causes no symptoms for 3–20 days after ingestion. Typically around day 11, the process of kidney failure begins, and is usually symptomatic by day 20. These symptoms can include pain in the area of the kidneys, thirst, vomiting, headache, and fatigue. A few species in the very large genus *Cortinarius* contain this toxin. People having eaten mushrooms containing orellanine may experience early symptoms as well, because the mushrooms often contain other toxins in addition to orellanine.

Muscarine: Muscarine stimulates the muscarinic receptors of the nerves and muscles. Symptoms include sweating, salivation, tears, blurred vision, palpitations, and, in high doses, respiratory failure. Muscarine is found in mushrooms of the genus *Omphalotu*s, notably the

jack o' Lantern mushrooms. It is also found in A. muscaria, although it is now known that the main effect of this mushroom is caused by ibotenic acid. Muscarine can also be found in some Inocybe species and *Clitocybe* species, in particular *Clitocybe dealbata*, and some red-pored Boletus members.

Gyromitrin: Stomach acids convert gyromitrin to monomethylhydrazine (MMH), a compound employed in rocket fuel. It affects multiple body systems. It blocks the important neurotransmitter GABA, leading to stupor, delirium, muscle cramps, loss of coordination, tremors, and/or seizures. It causes severe gastrointestinal irritation, leading to vomiting and diarrhea. In some cases, liver failure has been reported. It can also cause red blood cells to break down, leading to jaundice, kidney failure, and signs of anemia. It is found in mushrooms of the genus *Gyromitra*. A gyromitrin-like compound has also been identified in mushrooms of the genus *Verpa*.

Coprine: *Coprine* is metabolized to a chemical that resembles disulfiram. It inhibits aldehyde dehydrogenase (ALDH), which, in general, causes no harm, unless the person has alcohol in their bloodstream while ALDH is inhibited. This can happen if alcohol is ingested shortly before or up to a few days after eating the mushrooms. In that case the alcohol cannot be completely metabolized, and the person will experience flushed skin, vomiting, headache, dizziness, weakness, apprehension, confusion, palpitations, and sometimes trouble breathing. *Coprine* is found mainly in mushrooms of the genus *Coprinus*, although similar effects have been noted after ingestion of *Clitocybe clavipes*.

Ibotenic acid: Decarboxylates into muscimol upon ingestion. The effects of muscimol vary, but nausea and vomiting are common. Confusion, euphoria, or sleepiness are possible. Loss of muscular coordination, sweating, and chills are likely. Some people experience visual distortions, a feeling of strength, or delusions. Symptoms normally appear after 30 minutes to 2 hours and last for several hours. *A. muscaria*, the "Alice in Wonderland" mushroom, is

known for the hallucinatory experiences caused by muscimol, but *A. pantherina* and *A. gemmata* also contain the same compound. While normally self-limiting, fatalities have been associated with *A. pantherina*, and consumption of a large number of any of these mushrooms is likely to be dangerous.

REFERENCES

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