

POISONOUS PLANTS OF TURKEY
WEEK 11

POISONOUS FUNGI

**About 50-100 of 5000
identified mushrooms
have toxic effects on
humans.**

CLASSIFICATION OF CHEMICAL COMPOUNDS in POISONOUS MUSHROOMS:

1-CYCLOPEPTIDES:

These are compounds of peptide structure, consisting of 7 - 8 amino acids.

The **MOST DANGEROUS** compounds found in fungi are members of this group and the cyclopeptides are examined under 3 subheadings.

a. Amatoxins:

- Bicyclic octapeptide (8 amino acid) structure.
- Heat-resistant substances (They do not decompose with cooking or enzymes).
- Cytotoxic.
- They cause necrosis in the liver and kidneys.
- They cause **Phalloides Syndrome**.
- 9 amatoxins have been identified so far and the most dangerous one is ALFA-AMANITINE and 0.1 mg / kg is lethal.

-Amatoxin containing species;
Amanita phalloides, A.verna,
A.virosa, Galerina unicolor,
Lepiota helveola

b. Phallotoxins:

- Phallotoxins consist of at least seven amino acids, all of which are bicyclic.
- They are found in *Amanita phalloides*, *A.verna*, *A.virosa* species.
- They are ineffective because they are not absorbed in the gastrointestinal tract.

c. Virotoxines

--Monocyclic, heptapeptide structures seen in *Amanita virosa*.

--The structure and biological activity of virotoxins are similar to that of phallotoxins.

2 – GYROMITRIN:

--Their main chemical structure is:
monomethyl hydrazin (MMH)

--It causes necrosis in the liver. It also
causes **Gyromitra Syndrome**.

---Gyromitrin containing species:

Gyromitra esculenta*, *G.ambigua*, *G.gigas
dir.

3 – MUSCARINE:

- It's a compound of quaternary ammonium structure.**
- It is effective on the central nervous system.**
- It causes MUSCARINE SYNDROME.**
- Seen in *Inocybe* and *Clitocybe*.**

4– COPRINE:

-Onset of Antabuse-like symptoms may begin a few minutes after alcohol is consumed by a person who has eaten Inky Caps (***Coprinus atramentarius***).

-Even alcohol consumption as much as 5 days after eating Inky Caps can trigger the Antabuse-like reaction.

5 –IBOTENIC ACID MUSCIMOL:

- They have hallucinogenic effect.
- In *Amanita muscaria* and *A. pantherina*.
- Mushrooms has only ibotenic acid and it turns into muscimol during drying.
- Both are effective on central nervous system.
- They cause **Pantherina Syndrome**.

6 –PSILOCYBIN, PSILOCIN:

- Contain the indole ring.
- Isolated from *Psilocybe mexicana*.
- Effective on Central Nervous System (CNS).
- In human body, they affect the brain, and show some cross-tolerance with substances such as LSD. It causes **Psilocybin Syndrome**.

7 –ORELLINE AND ORELLANINE:

- They have **Pyridine N-oxide** structure.
- Found in ***Cortinarius sp.*** mushrooms (***C.orellanus*** and ***C.orellanoides***).
- They decrease glomerular filtration and cause **Orellanus Syndrome** by acting on kidney.

8 –GASTROINTESTINAL IRRITANTS:

--The chemical profile of some fungi are not well defined but they are generally known as containing some poisonous compounds which irritate the gastrointestinal tract.

CLASSIFICATION OF MUSHROOM POISONING IN PHARMACOLOGICAL TERMS

- The period between ingestion of poisonous mushrooms and the appearance of first toxic symptoms is called **LATENT PHASE** which is closely related to prognosis.
- If the latent phase is short, poisoning is relatively light and non-hazardous.
- If the latent phase is long, poisoning is heavy and very dangerous.

According to appearance of poisoning symptoms, mushroom poisoning is divided into two classes:

1 - Mushroom poisoning with late symptoms
(Long Latent Phase)

2 - Mushroom poisoning with early symptoms
(Short Latent Phase)