Fungicides Encyclopedia Article

Fungicides

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Fungicides

Fungicides are chemicals that inhibit the growth of **fungi**. Fungi can attack agricultural crops, garden plants, wood and wood products (dry rot in particular is a major problem), and many other items of use to humans. Fungicides usually kill the fungus that is causing the damage. Sulfur, sulfur-containing compounds, organic salts of iron, and heavy metals are all used as fungicides. Other fungicide types include carbamates or thiocarbamates such as benomyl and ziram, thiozoles such as etridiazole, triazines such as anilazine, and substituted organics such as chlorothalonil. Many non-drug fungicides have low mammalian tolerance for toxicity, and have been shown to cause cancer or reproductive toxicity in experimental animal studies.

Fungicides operate in different ways depending upon the species that they are designed to combat. Many are poisons and their application must be undertaken carefully or over-application may kill other plants in the area. Some fungicides disrupt some of the metabolic pathways of fungi by inhibiting energy production or biosynthesis, and others disrupt the fungal cell wall, which is made of **chitin**, as opposed to the cellulose of plant cell walls. Chitin is a structural polysaccharide and is composed of chains of N-acetyl-D-glucosamine units. Fungal pathogens come from two main groups of fungi, the ascomycetes (rusts and smuts) and the basidiomycetes (the higher fungi--mushrooms, toadstools, and bracket fungi).

Human fungal infections, such as athlete's foot, can be treated by fungicides normally referred to as antifungal agents or antimycotics. Compounds such as fluconazole, clotrimazole, and nystatin are used to treat human fungal infections.