

Mushroom Spawn Exudate Formation and Early Mycological Cancer Chemotherapy Studies

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Various seeds and other material suitable for mushroom spawn production may prove suitable for mycelial growth and exudate production. When dense mycelial growth and no fruiting body formation developed on spawn media, exudate production was at times quite significant and collected as droplets on the colony surface. According to spawn material selected for fungal growth, the production of diffusible hyphal waste exudate occurred suitable for testing and isolating potential antitumor and antimicrobial agents. Conditions with little to no exudate formation would possibly be less valuable to the pharmaceutical industry. Both *Cantharellus cibarius* Fr. and *Pleurotus ostreatus* (Jacq.: Fr.) Kumm. were capable of producing exudate, which collected in liquid pools on spawn mycelium.

The addition of carbon, nitrogen, or vitamins to the spawn medium may increase mycelial growth and greater production of hyphal waste exudate for the production and isolation of test compounds. Initial studies in the pharmaceutical industry examined numerous microfungi isolates for antimicrobial activity following the description, isolation, and purification of the drug penicillin from *Penicillium notatum* Westf. by Al-

exander Fleming in England during the 1940s. Researchers then began studying fungal products, exudates, and waste compounds for antibacterial properties, as well as potential antitumor activities. Penicillin initiated the transformation of the drug industry into the conglomerate that we know today.

During the 1950s and 1960s in the United States, increased numbers of compounds became available through the chemical industry as possible tumor retarding agents. Each compound was examined for carcinostatic properties using government standards by a screening program using animal test systems requiring weeks to determine its value as a possible antitumor agent. Many of these compounds were issued through the National Institutes of Health, Public Health Services, and the Pure Food and Drug Act. I found a fungal species and its mycotic infective symbiont that served as an early potential drug screening assay.

Cancer treatment may gain much progress from compounds produced by Basidiomycetes; however, different cancer therapy and pretreatment not known today may be common methods of cancer eradication and prevention in the future.