

## Medicinal Polypores of the Forests of North America: Screening for Novel Antiviral Activity

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Polypore mushrooms have been used medicinally for thousands of years. The Greek physician Dioscorides first described the use of a wood conk, Agarikon, now known as *Fomitopsis officinalis* (Vill.: Fr.) Bond. et Singer (= *Laricifomes officinalis*), as a treatment against consumption in 65 AD. Other wood conks, such as Ling Chi or Reishi, have had a similarly long history of use in Asia. In the past 20 years, wood conks have been carefully explored for their immunomodulating and anticancer properties. More recently, mushrooms, including polypores, have and are being explored for their antimicrobial properties.

Upon submitting more than a hundred *in vitro* cultures of mushrooms to the US Defense Department's Bioshield BioDefense program, several tests show that some of these polypore mushrooms have strong antiviral activity. Within these verdant natural landscapes, trees hundreds of years old host ancestral strains of these elusive polypores. Species that are now rare, or in some cases thought to be extinct, still

reside in the pristine old growth forests of the Pacific Northwest of North America. When clones from these mushrooms were grown *in vitro* and submitted for antiviral screening, several mycelial cultures produced antibiotics effective against Pox and other viruses. Notably, strains vary in their antiviral properties. Our natural genomes hold within them great potentials for staving off disease and have not yet been fully explored. The fungal diversity within these genomes may prove critical for isolating the most active strains, similar to the lessons learned from the isolation of *Penicillium chrysogenum* strains that lead to the commercialization of penicillin and saved millions of lives.

With deforestation, pollution, and industrialization, societies should reevaluate the importance of their natural forests in the context that they hold within them novel medicines of enormous socioeconomic importance. The old paradigm of viewing the forest as valuable only in terms of timber seems overly simplistic given this new knowledge.