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Production of the Medicinal Mushroom *Tremella fuciformis* Berk. by Mixed-Culture Cultivation on Synthetic Logs

Alice W. Chen[1] *and Nian-Lai Huang*[2]

[1]Specialty Mushrooms, 1730 Penfield Rd., No. 41, Penfield, NY 14526, USA, and [2]Saming Mycological Institute, Saming, Fujian Province, China

Yin er or silver ear (*Tremella fuciformis* Berk.), along with lotus seeds and dried Chinese red plums, and so forth, are the secret ingredients of a treasured nurishing dessert in soup form reserved for Chinese Lunar New Year. A major medicinal mushroom of temperate climate, *T. fuciformis* is a white jelly fungus with a long-standing history in natural-log cultivation that can be traced back to 1894 in Ching Dynasty. More recently since 1978, synthetic-log cultivation is the choice for production in China. Before cultivation, prior understanding of the unusual characteristics of *T. fuciformis* is essential: (1) Carbohydrate metabolism: *T. fuciformis* cannot degrade either cellulose nor lignin efficiently, if at all. Although *T. fuciformis*, a basidiomycete, is not fastitious on laboratory media, it depends on *Hypoxylon azcheri*, an ascomycete, nutritionally in a mixed culture to break down complex substrates containing celloluse and lignin. (2) Specificity of pairing *T. fuciformis* and *H. azcheri*, isolated from the same log in the same ecological niche is required. (3) Under different growth parameters, *T. fuciformis* produces basidia in sexual reproduction and yeastlike conidia in asexual reproduction. Mycelia give rise to fruiting. (4) Mixed cultures or spawn are unstable. Go back to original cultures. The most critical stage in cultivation of yin er is spawn preparation, a three-step process: (1) the mother culture or mother spawn: creating mixed cultures in agar slants of *T. fuciformis* by adding minute amount of *H. azcheri;* (2) primary spawn: the mycelia of the successful mixed culture is then used to inoculate a sawdust-based fruiting substrate to test for primordia formation, an indicator for fruiting capability; (3) spawn: cultures successful in producing primordia are selected for making spawn using mixed mycelia as inoculum. The sequence of inoculating fungal species, the ratio of the fungal inoculum, and management of growth parameters during spawn-making are crucial to establish the coexistence of *T. fuciformis* and *H. azcheri*.

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