



The Famous “Fuling” (*Wolfiporia hoelen*) of Traditional Chinese Medicine

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This article is part of a series called the 1001 Mushrooms Project. Inspired by Charles Mcllvaine’s classic text *One Thousand American Fungi, my goal is to eat 1001 mushrooms (a “one up” on Mcllvaine) and document the experience.*

Wolfiporia (*Polyporaceae, Basidiomycota*) would be an unremarkable fungus—exciting only to specialists of resupinate polypores and other lovers of such crusty things—if not for its mega-sized, medicinal sclerotium. A sclerotium (plural: sclerotia) is a compact mass of hyphae, typically with a melanized rind, that serves as a “resting” structure for survival during periods of unfavorable conditions such as drought and fire.

With a diameter sometimes exceeding two feet, a weight up to seven pounds, and a thick, bark-like husk, *Wolfiporia sclerotia* resemble a large, buried coconut.

The genus name *Wolfiporia* honors Frederick Wolf, the first Western mycologist to publish the link between these mysterious underground mycelial masses and their inconspicuous mushrooms (Wolf, 1922). Called “fuling” (茯苓) in Chinese, *Wolfiporia sclerotia* have been revered in traditional Chinese medicine for over 2,000 years as a treatment for vomiting, insomnia, and numerous other ailments (Li et al., 2022b). Previously classified as *Wolfiporia cocos* (or synonyms such as *Poria cocos*, *Pachyma cocos*, and *W. extensa*), recent studies have clarified that *W. cocos* is actually restricted to North America and the name *W. hoelen* best applies to the Chinese species (Wu et al., 2020; Stalpers et al., 2021; Papp and Dai, 2022). Common names in English include Indian bread and tuckahoe—an Anglicized Native American word appropriated by white botanists for *Wolfiporia cocos* (Wolf, 1922). When researching and shopping for fuling, you’ll encounter all these different names, which can make things pretty confusing!

Fuling has been cultivated for more than a millennium. As a saprotroph and facultative parasite of pine roots, the earliest cultivation methods simply involved cutting down pine trees to provide a free lunch for the fungus. This progressed to the direct inoculation of pine roots with sclerotia. Nowadays, fuling is cultivated at large scales on sawdust blocks using

sterile techniques in indoor grow rooms (Wang et al., 2013; Jiang et al., 2024). Numerous studies have been conducted on its pharmacology, secondary metabolites, and genetics to explore the underpinnings of its purported medical properties (Sun et al., 2015; Li et al., 2022a; Yang et al., 2024). While I'm not qualified to analyze the modern pharmacological results, biochemists have identified over 100 terpenoid compounds and dozens of polysaccharides that are active areas of research, and fuling continues to be widely cultivated and consumed (Li et al., 2022b).

I bought fuling from a grocery store in Philadelphia's Chinatown as part of the North American Mycological Association's (NAMA) Commercial Mushroom Mycobltitz. The sclerotium had been rendered into small cubes that were as white as marble and just about as hard. Converting the cubes into a powder almost destroyed my blender and would have destroyed my hearing, too, if I hadn't used ear plugs. The powdered fuling had a dusty, oily, flour-like smell. There are two main sweet treat preparations for fuling ("sugar helps the medicine go down"): fuling jiabing (茯苓夹饼), a traditional pastry of Beijing (also called "tuckahoe pie"); and fuling gao

(茯苓糕), a rice cake with a sweet sesame filling, typically translated as "poria cake."

My partner and I cooked fuling gao together following a video from the YouTube channel Handmade Story 手作传说. To make the filling, we first toasted 100 g of black sesame seeds, which we ground with a mortar and pestle and combined with 50 g of honey. To make the dough, we mixed 150 g of rice flour, 50 g of glutinous rice flour, and 25 g of fuling powder. We then dissolved 40 g of sugar into 120 mL of warm soy milk and slowly poured the liquid into the dry ingredients, stirring constantly to incorporate. The dough remained quite dry looking and was just wet enough that when pressed together and tossed lightly in the hand it held its shape. We then passed the dough through a sieve, resulting in a fine powder. My partner had been gifted a beautiful, wooden, thrifted Chinese pastry mold, and we attempted to make the fuling gao with that. An open-faced metal mold or even just a bowl also works according to other videos I found, but with a thicker pastry the cooking time will need to be increased. We spooned the powdery dough into the mold, pressed the center with a spoon to form a cavity for the filling, added the toasted



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sesame seeds and honey mix, and topped it off with more powder. After covering with a damp cheese cloth, we inverted the whole thing directly into a steam pot, carefully removed the mold, and steamed the pastry for 10 minutes.

The outcome was beautiful. The sesame-honey filling was as sweet and delicious as you'd expect. I was surprised by the flavor of the fuling dough. It possessed something of an almond essence, which was elevated by the garnish of dried osmanthus flowers. The dough itself was a little dry and "sandy" in the way of rice flour, and I think it would have benefitted from some fat. I'll be excited to try some store-bought "poria cake" or "tuckahoe pie" to see how our preparation and flavors compare.

As is true for most topics in mycology, I had no idea of the rich history and depth of knowledge that I would encounter in my research of these hard white cubes simply labelled "Indian bread." Hopefully someday I'll also have the opportunity to sample the sclerotium of the true *Wolfiporia cocos* of North America, which is actually a complex composed of multiple undescribed species (Wu et al., 2020). All told, *Wolfiporia* might be more than a singleton in my quest to eat 1001 mushrooms!

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