



Final report

**Effects of Polysaccharides Isolated from the Gray Oyster
Mushroom [*Pleurotus sajor-caju* (Sing.) Fr.] on L6 Myotubes and
3T3-L1 Fibroblasts**

By

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Abstract

Medicinal mushrooms have been known for their ability to promote health benefits for many years. Among the active compounds, polysaccharides have been shown to promote many biological activities, including immunomodulatory, anti-diabetic and anti-obesity activities. Our previous work showed the ability of mushroom polysaccharides to stimulate glucose uptake in the L6 myotubes. However, the effect of purity on their activity to stimulate glucose uptake has not been investigated. In addition, their effects on lipid metabolism in 3T3-L1 adipocytes have not been tested. In this study, we extracted, purified, and characterized polysaccharides from the gray oyster mushroom (*Pleurotus sajor-caju*). The analyzed fractions contain β -glucan. Monosaccharide composition analysis of the sample shows that the polysaccharides contain glucose and mannose as their major constituents. All the polysaccharide fractions promote glucose uptake in L6 myotubes in dose- and time-dependent fashions. Interestingly, fractions that contain more protein contaminants tend to stimulate glucose uptake better than fractions with less proteins. Additionally, we found that the polysaccharide sample promotes lipolysis but could not inhibit adipogenesis in 3T3-L1 adipocytes. The sample also stimulates expression of Il6 gene but inhibits expression of Glut4 gene, suggesting that the polysaccharide sample trigger inflammatory response in 3T3-L1 adipocytes. The mechanism of how polysaccharides stimulate glucose uptake in muscle cells and stimulate lipolysis in adipocytes will be characterized in our future research.