

Detection of a Non-animal Source of Glycosaminoglycans from Edible Mushrooms in Northern Thailand

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ABSTRACT

Several kinds of cultivated or local edible mushrooms exist in northern Thailand. While their nutritional features have been extensively analyzed, the presence of phytochemicals and glycosaminoglycans has yet to be investigated. Thus, in this study, we examined the presence of phytochemicals and glycosaminoglycans from 10 cultivated or local mushrooms: milk white russula, hygrosopic earthstar, log white fungi, log black fungi, shitake mushroom, rosy russula, sajon-caju mushroom, Jew's ear, bolete, and straw mushroom. Phytochemical analysis revealed the presence of carbohydrates, amino acids, and flavonoids in the extracts from most of the mushrooms. We detected glycosaminoglycans in all of the extracts using dimethylmethylene blue (DMMB) dye-binding assay and UV-Vis spectrophotometry. Hygrosopic earthstar contained the most glycosaminoglycans and sajon-caju mushroom the least. However, we were unable to distinguish the types of glycosaminoglycans, which should be considered for future study. In summary, the phytochemicals found here are crucial non-animal dietary sources of carbohydrates, amino acids, and antioxidants. In addition, the glycosaminoglycans detected in the mushroom extracts in this study potentially offer a non-animal source of glycosaminoglycans that may have clinical applications, apart from their nutritive value.

Keywords: Mushrooms, Phytochemicals, Glycosaminoglycans, Dye-binding assay, Spectrophotometry