

Title Health-beneficial qualities of the edible mushroom, *Agrocybe aegerita*
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Abstract

The black poplar mushroom, *Agrocybe aegerita* is a popular edible mushroom with reported anti-tumor properties. A bioactivity-guided investigation gave positive results for ceramide (**1**), methyl- β -d-glucopyranoside and α -d-glucopyranoside, along with already reported linoleic acid and its methyl ester. The structure elucidation of the above was accomplished by NMR and mass spectral methods. The ceramide (**1**) inhibited cyclooxygenase enzymes, COX-1 and -2, by 43 and 92.3%, respectively at 25 μ g/ml (34.4 μ M). The 50% inhibition concentration (IC₅₀) of compound **1** against COX-2 was 5.3 μ g/ml (7.3 μ M). Similarly, its anti-cancer potential was investigated against five human cancer cell lines *in vitro* and it was found to inhibit the proliferation of stomach, breast and CNS cancer cell lines at 26.9, 23.2 and 39.1%, respectively, at 100 μ g/ml (139 μ M) concentration. This is the first report of the isolation of ceramide from *A. aegerita* and its COX and tumor cell proliferation inhibitory activities. This suggested that the consumption of *A. aegerita* would assist in alleviating inflammatory conditions, as well as reducing the development of the above cancers.