Antidiabetic Effects and Antioxidant Properties of the Saggy Ink Cap Medicinal Mushroom, Coprinus comatus (Agaricomycetes), in Streptozotocin-Induced Hyperglycemic Rats

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Abstract	Coprinus comatus is known for its antihyperglycemic benefits. This study aimed to identify the effect of bioactive compounds of C. comatus extract as an antidiabetic agent linked to glucagon-like peptide 1 (GLP-1) and antioxidant properties in increasing glutathione (GSH) levels. This study used six groups of Wistar rats (n = 24). Group 1 comprised the healthy control. Groups 2-6 received 45 mg of streptozotocin/kg body weight (BW) once. Group 3 was also given 45 mg of metformin/kg BW, whereas groups 4-6 were also given 250, 500, and 750 mg of C. comatus ethyl acetate extract/kg BW for 14 days. Antidiabetic effects of alkaloids and saponin were seen in blood glucose and glycated hemoglobin (HbA1c) degradation, increased insulin, and increased inhibition of GLP-1 through dipeptidyl peptidase-4 activity. Flavonoid antioxidants, ascorbic acid (vitamin C), and alpha-tocopherol (vitamin E) are useful in protecting pancreatic beta cells from free radicals. Data were analyzed using analysis of variance and Duncan's multiple range test. C. comatus ethyl acetate extract at doses of 250, 500, and 750 mg/kg BW worked as an antidiabetic and antioxidant agent that contained flavonoids (16.4 mg/L), alkaloids (2.97 mg/L), saponin, rutin (351.13 ppm), vitamin C (132.342 mg/L), and vitamin E (102.320 g/L). The 250-mg dose was effective in increasing insulin (8.11 mlU/mL) and reducing blood glucose (23.92%) and HbA1c (3.775%), whereas the 500-mg dose was effective in increasing levels of GLP-1 (1056.923 ng/L) and GSH (4.62 mu mol/L).
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