

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

Publons ID	51317486
Wos ID	WOS:000701916400002
Doi	
Title	Antidiabetic Effects and Antioxidant Properties of the Saggy Ink Cap Medicinal Mushroom, <i>Coprinus comatus</i> (Agaricomycetes), in Streptozotocin-Induced Hyperglycemic Rats
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Publish Date	2021
Journal Name	INTERNATIONAL JOURNAL OF MEDICINAL MUSHROOMS
Citation	4
Abstract	<p><i>Coprinus comatus</i> is known for its antihyperglycemic benefits. This study aimed to identify the effect of bioactive compounds of <i>C. comatus</i> 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 <i>C. comatus</i> 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. <i>C. comatus</i> 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 mIU/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).</p>
Publish Type	Journal
Publish Year	2021
Page Begin	9
Page End	21
Issn	1521-9437
Eissn	1940-4344
Url	https://www.webofscience.com/wos/woscc/full-record/WOS:000701916400002
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