

Ethanol extract of the mushroom *Coprinus comatus* exhibits antidiabetic and antioxidant activities in streptozotocin-induced diabetic rats

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First Author	
Last Author	
Authors	Ratnaningtyas, NI; Hernayanti, H; Ekowati, N; Husen, F;
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Abstract	<p>Context Edible mushrooms have a long history of use in traditional Chinese or Japanese medicine. <i>Coprinus comatus</i> (O.F. Mull.) Pers. (Agaricaceae) contains antioxidant and antidiabetic agents.</p> <p>Objective To identify the benefits of ethanol extracts of the <i>C. comatus</i> fruit body in streptozotocin-induced hyperglycaemic rats by evaluating their blood glucose, glycosylated haemoglobin (HbA1c), insulin, glucagon-like peptide-1 (GLP-1), dipeptidyl peptidase-4 (DPP-4), and glutathione (GSH) levels, with and without extract administration. Materials and methods Wistar rats were either left untreated or were administered 45 mg/kg body weight (BW) streptozotocin; 45 mg/kg BW metformin; or 250, 500, or 750 mg/kg BW extract for 14 days. The blood glucose, GLP-1, DPP-4, GSH, insulin, and HbA1c levels were determined. Data were analysed using analysis of variance and Duncan's multiple range tests. Results Preliminary data showed that administration of <i>C. comatus</i> ethanol extract dose of 250, 500, and 750 mg orally has no toxicity effects after 24 h administration. The ethanolic extract of fruiting body of <i>C. comatus</i> considerably reduced the rat's fasting blood glucose levels 26.69%, and DPP-4 6.97% at dose of 750 mg. The extract reduced HbA1c 4-4.30%, increased GLP-1 71.09%, GSH 11.19% at dose of 500 mg, and increased insulin levels 13.83%. Extracts contain bioactive compounds such as flavonoid, alkaloid, terpenoids, vitamins C and E, rutin, and saponin. Conclusions The <i>C. comatus</i> extract can be used as herbal medicine that reduces diabetic symptoms. Further investigation on <i>C. comatus</i> extracts should be conducted with gas chromatography-mass spectrometry to characterise the bioactive compounds.</p>
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Author	Dr Dra NUNIEK INA RATNANINGTYAS, M.S