Rebalancing hepatic carbohydrate metabolism: Effects of *Dalbergiella welwitschii* (Baker) Baker f. (Fabaceae) under diabetic conditions

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Abstract This study evaluated the effects of an alkaloid-rich leaf extract of Dalbergiella welwitschii (Baker) Baker f. on hepatic carbohydrate metabolism in streptozotocin-induced diabetic rats. Diabetes was induced in rats, which were then treated with low (50 mg/kg) and high (100 mg/kg) doses of the extract, or metformin (200 mg/kg), for 20 days. Key hepatic enzymes-glycogen phosphorylase, glucose-6-phosphatase, lactate dehydrogenase, fructose-1,6-bisphosphatase, glycogen synthase, and hexokinase-along with hepatic glycogen and insulin levels were measured. Treatment with the extract significantly restored enzyme activities, increased insulin levels, and enhanced glycogen content. These results indicate that D. welwitschii extract can modulate hepatic carbohydrate metabolism and may have potential therapeutic benefits for diabetes management.

Keywords **Author Keywords:** alkaloids; diabetes mellitus; hepatic enzymes; phytotherapy; west African blackwood

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1 **Phytochemical and anti-inflammatory activities of the methanol extract and fractions of*Dalbergiella welwitschii*Baker (Baker.f) leaves.**

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0 References

Adediwura, F. J. and Oluwakemi, A.
2013 | Research Journal of Pharmaceutical, Biological and Chemical Sciences 4(4), pp.1191-1200
Research Journal of Pharmaceutical, Biological and Chemical Sciences

2 **Jimson weed (*Datura stramonium*L.) alkaloid extracts modulate cholinesterase and monoamine oxidase activities in vitro: possible modulatory effect on neuronal function.**

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0 References

Ademiluyi, A. O.; Ogunsuyi, O. B.; (...); Agbebi, O. J.
2016 | Comparative Clinical Pathology 25(4), pp.733-741
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