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MALAYSIAN PROPOLIS EXTRACT ALLEVIATES MACROVASCULAR COMPLICATION IN DIABETIC RATS: PHARMACOLOGICAL POTENTIAL OF NATURAL BEE PRODUCT

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Malaysian propolis (MP) derived from stingless bee (*Heterotrigona itama*) possesses anti-hyperglycemic effect *in vivo* and show antioxidant activity. The aim of the study was to observe the histological changes in aorta of streptozotocin-induced diabetic rats following MP administration. Thirty adult male *Sprague Dawley* rats were randomly assigned into five groups (n=6/group) of normoglycemic control (A); diabetic (DM) control (B); DM with metformin (C); DM with MP (D); DM with metformin and MP combination (E). Intraperitoneal streptozotocin (60mg/kg body weight) was employed to induce diabetes mellitus. Distilled water (1ml/day) as vehicle (control), metformin (300mg/kg/day) and MP (300mg/kg/day) were administered orally for four weeks, immediately after successful diabetic induction. The arch of aorta was harvested for histological study using Hematoxylin & Eosin and Verhoeff-Van Gieson stains. Aorta cross sections were examined under light microscope for changes in tunica intima and media. Tissues deposition in tunica intima marks the outset of accelerated atherosclerosis in diabetes mellitus. The mean (standard error) of intimal thickness was found to be 2.83(0.21), 4.52(1.00), 2.68(0.39), 2.54(0.36) and 2.11(0.35) μm for group A, B, C, D and E respectively. This study found a significant increase (1.6 fold) in tunica intima thickness in the DM group compared to the normoglycemic control ($p < 0.05$). There was no significant difference in tunica media thickness and number of elastic lamellae. In conclusion, we infer that supplementation with MP modifies early progression of diabetic macrovascular complication and defers adverse sequelae of diabetes mellitus on aorta, with additional mechanism beside its anti-hyperglycemic effect, warranting future research.

Keywords: Malaysian propolis; aorta histology; diabetes mellitus