

Characterization of an anti-hyperglycemic coumarin from the fruits of *Averrhoa carambola* (Star Fruit)

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Objectives: The present study was carried out to isolate and characterize the anti-hyperglycemic principles of the fruits of *Averrhoa carambola*.

Methods: The fresh ripe fruits of *A. carambola* were collected from Mathugama area (Southern Province) in July 2014. The fruits were cut into small pieces and dried at 40⁰ C. The dried and powdered fruits of *A. carambola* were successively extracted with n-hexane, CH₂Cl₂ and CH₃OH using soxhlet apparatus. The CH₂Cl₂ extract was subjected to silica gel column chromatography (CC), eluting in a stepwise gradient with hexane and ethylacetate (EtOAc) mixtures. The fractions eluted with hexane: EtOAc (60:40) yielded a mixture which with preparative thin layer chromatography (CH₂Cl₂ : EtOAc – 9:1) afforded JW-AC-3 (20 mg). The structure of JW-AC-3 was elucidated on the basis of its UV, IR, MS, NMR including DEPT, COSY, NOESY, HMQC, HMBC experiments and direct comparison with reported data.

Results: The JW-AC-3 was identified as scopoletin by direct comparison of its spectral data with reported data of scopoletin. Although this compound has previously been isolated from various plant species, this is the first report of this compound from *A. carambola*.

Conclusions: Scopoletin has been shown to possess significant anti-hyperglycemic activity by previous workers. The results clearly indicated that the majority of the anti-hyperglycemic activity of the fruits of *A. carambola* could be attributed to scopoletin. As the fruits are used in traditional medicine for anti-hyperglycemic effects, the results obtained in this study could be used in the rationalization of ethnomedical use of the fruits of *A. carambola*.