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Antithrombocytopenic activity of carpaine and alkaloidal extract of carica papaya linn. Leaves in busulfan induced thrombocytopenic wistar rats

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Abstract

Ethnopharmacological relavance: The decoction of Carica papaya Linn. leaves is used in folklore medicine in certain parts of Malaysia and Indonesia for the treatment of different types of thrombocytopenia associated with diseases and drugs. There are several scientific studies carried out on humans and animal models to confirm the efficacy of decoction of papaya leave for the treatment of disease induced and drug induced thrombocytopenia, however very little is known about the bio-active compounds responsible for the observed activity. The aim of present study was to identify the active phytochemical component of Carica papaya Linn. leaves decoction responsible for anti-thrombocytopenic activity in busulfan-induced thrombocytopenic rats.

Materials and methods: Antithrombocytopenic activity was assessed on busulfan induced thrombocytopenic Wistar rats. The antithrombocytopenic activity of different bio-guided fractions was evaluated by monitoring blood platelet count. Bioactive compound carpaine was isolated and purified by chromatographic methods and confirmed by spectroscopic methods (LC-MS and 1D/2D-1H/13C NMR) and the structure was confirmed by single crystal X-ray diffraction. Quantification of carpaine was carried out by LC-MS/MS equipped with XTerra(®) MS C18 column and ESI-MS detector using 90:10 CH3CN:CH3COONH4 (6mM) under isocratic conditions and detected with multiple reaction monitoring (MRM) in positive ion mode.

Results: Two different phytochemical groups were isolated from decoction of Carica papaya leaves: phenolics, and alkaloids. Out of these, only alkaloid fraction showed good biological activity. Carpaine was isolated from the alkaloid fraction and exhibited potent activity in sustaining platelet counts upto 555.50±85.17×10(9)/L with no acute toxicity.

Keywords: Busulfan; Carica papaya Linn.; Carpaine; Platelets; Thrombocytopenia.