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A study on mosquito larvaecidal and hyper haemilytic compounds of palmyrah flour

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The presence of several bioactive principles in palmyrah (*Borassus flabellifer* L.) flour is documented. In the present study attempts were made to identify the effects of palmyrah flour extractives on different mosquito larvae at different larval stages. The methanol extractive of palmyrah flour indicated activity against dengue mosquito (*Aedes albopictus* and *Aedes aegypti*) larvae with a LD_{50} value of 0.06 to 0.076 mg/ml depending on larval molting stage. Larvaecidal activity was due to formation of a physical barrier on the surface of water by compounds in the methanol extract. These high froth-forming compounds lowered the surface tension of the water and were identified to be saponins. The lethality was dependent on the length of the breathing siphons. The *Aedes* mosquito larvae with short breathing siphons were unable to penetrate the physical barrier formed by the flour extractive. However, *Culex quinquefasciatus*, with long breathing siphons was not effected. The existence of a saponin, which exhibited high haemolytic activity on human red blood cells, was observed during these studies. The applicability of the extract as a mosquito control agent in natural water bodies is limited due to high toxicity to other gill and lung fish (*Poecilia reticulata* (Guppy) and *Micoglanis iheringis*, (Antenna catfish)). The compounds act on the breathing surfaces, lungs, gills of fish and results in death. However, the compound can be used as a dengue in-house mosquito controlling

method successfully as the dengue mosquito breeds in house holds and garden containers. Ultra structural differences or clastrogenic effects were not observed using transition electron microscopy in the larvae. Bioassay guided fractionation and MicroTOF mass spectrometry led to the identification of the structure of active compound as β-sitosterol – Glc – Rha – Rha.

The compound with high haemolytic compound obtained was identified as a flabelliferin with six carbohydrate units attached to β-sitosterol. Mass spectrum resulted peaks at M^+/Z 1534.8015, 1307.6594, 1161.6041, 869.4889, 723.4309, 577.3737 and 415.3202. According to the mass spectrum and earlier data we postulate the attachment of a simple fatty acid to the flabelliferin.

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