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# Physico-chemical standardization and preliminary phyto-chemical studies on fruits of *Averrhoa carambola* L. (star fruit) grown in Sri Lanka

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The importance of pharmacognosy has been widely felt in recent times. Unlike taxonomic identification, pharmacognostic study includes parameters which help in identifying adulteration even in the dry powder form. *Averrhoa carambola* L. (star fruit)) belongs to the family Oxalidaceae and is cultivated in Asia including India and Sri Lanka for its edible fruits. Fruits contain antioxidant and antiscorbutic properties and are used as a remedy for throat inflammation, mouth ulcers, toothache, cough, asthma, hiccups, tight feeling in the chest, nausea, vomiting, indigestion, colic diarrhea, jaundice, malarial splenomegaly and ascites.Up to date no standardization parameters have been established for the fruits of *A. carambola* grown in Sri Lanka. Therefore, an attempt was made to standardize fruits of *A. carambola* by (a) determination of physico-chemical parameters according to the WHO guidelines (b) qualitative and quantitative analysis of phytochemical constituents and (c) development of TLC fingerprints.

The percentages of moisture content, total ash, acid insoluble ash, water soluble ash, hot water extractable matter, cold water extractable matter, hot ethanol extractable matter and cold ethanol extractable matter of *A. carambola* fruits were 95.60 ± 0.10%, 3.75 ± 0.00%, 0.69 ± 0.04%,1.92 ± 0.00%, 79.95 ± 0.81%, 59.32 ± 0.56%, 63.70 ± 0.89%, 57.35 ± 0.50% (dry basis) respectively. The quantity of Hg, As, Pb and Cd were below 0.50, 0.10, 0.05 and 0.05 mg/kg respectively. Further, the present study revealed the presence of flavonoids (12.01 ± 0.03%), alkaloids (3.80 ± 0.01%), saponins (2.34 ± 0.02%), tannins (27.16 ± 0.05%), steroids (4.44 ± 0.01%), terpenoids and cardiac glycosides. Five prominent spots bearing $R_f$ values of 0.23, 0.32, 0.40, 0.45, 0.50 were present in the TLC fingerprint profile. In conclusion, these results may help in identification and in carrying out further research on A. *carambola* fruit based drugs which are used in Ayurveda and modern pharmacopoeia.

Keywords:*Averrhoa carambola* L., physico-chemical parameters, phytochemicals

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