

A Comparative Analysis of Four Major Alkaloids in *Areca catechu* (Areca nut) Varieties Based on Different Preparation Methods in Sri Lanka

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Different varieties of *Areca catechu* (Areca nut) are widely distributed in Sri Lanka. *A. catechu* seed has been a principle ingredient among betel quid chewers since ancient times. The four major areca alkaloids are explicitly, Arecoline, Arecaidine, Guvacoline and Guavacine and these areca alkaloids prompt oral carcinogenesis. *A. catechu* is classified as a group 1 carcinogen. The purpose of this study is to compare the alkaloid content of water extracts of *A. catechu* varieties in Sri Lanka. The six varieties of *A. catechu* samples were subjected to different preparation methods, such as fresh, water fermented (*mada puwak*) and sundried (*karunka*). A selected amount of samples were water fermented for a period of 10 months and selected amount of samples were sundried for a period of 6 months. Fresh, water fermented and sundried *A. catechu* preparations were finely grounded and 5 mg of fine powder was extracted with 50mg of distilled water. The samples were then injected to the Liquid chromatography - Mass spectrometry (LC-MS) for the spectrophotometric quantification. The data of the water extracts were statistically analysed using Microsoft Excel and Minitab 17 Statistical Software. Of fresh *A. catechu* water extracts, the highest concentration was reported in Guvacine of Hamban puwak variety (17mg/g) and the lowest alkaloid was reported as Arecaidine of Matale Chathura variety (0.7mg/g). In water fermented preparation, the highest

was reported in Guvacine of Rata Puwak variety (17 mg/g) and the lowest was Arecaidine content in Hamban Puwak (0.75mg/g). The highest areca alkaloid for the sun-dried preparation was Arecoline of Hamban Puwak variety (15.75mg/g) and the lowest was obtained by Arecaidine of Matale Chathura (0.5mg/g). In comparison to a similar study, the most abundant alkaloid of *A.catechu*, was Guvacine and this result supported all preparation methods of this study. However, the results of Arecoline, Arecaidine and Guvacoline alkaloid abundance did not match the current study as the composition levels deviated.

Keywords: Areca nut, Areca alkaloids, Oral cancer, LC-MS analysis