Cytotoxicity and Apoptosis Activity of Areca catechu Linn. Extract as Natural Anticancer Agent for Oral Squamous Cell Carcinoma

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Abstract : Background: Many herbs have been discovered to be potential sources of anticancer drugs. Biji Pinang or areca nut (Areca catechu Linn.) has a high content of phenolics and flavonoids, and which is related to antioxidant activity. However, data on its effects on oral squamous cell carcinoma is not available. Objectives: Identification of the cytotoxicity and apoptosis activity in HSC-2 and HSC-3. Methods: The areca nut was extracted by ethanol 96%, MTS assay and apoptosis activity with flow cytometry. Results: The extract of areca nut showed higher toxicity on HSC-3 cell compared to HSC-2. The IC₅₀ of HSC-3 was 164.06 µg/ml vs. 629.50 µg/ml in HSC-2. There was an increase in late apoptosis percentage after 24 and 48 hours in HSC-2. There was a significant increase in early apoptosis percentage after 24 hours and late in 48 hours in HSC-3. Conclusion: The antioxidant activity of the extract of areca nut might be associated with the selective cytotoxicity on HSC-2 and HSC-3. Apoptosis is the major cell death mechanism involved. The areca nut may play an important role in anticancer herb medicine.

Keywords : areca nut, cytotoxicity, apoptosis, oral carcinoma

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