

# ARECA NUT EXTRACT DEMONSTRATED APOPTOSIS-INDUCING MECHANISM BY INCREASED CASPASE-3 ACTIVITIES ON ORAL SQUAMOUS CELL CARCINOMA

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**Background:** Oral squamous cell carcinoma is a neoplasm of keratinocyte cells of oral mucosa epithelium that potentially spreads through lymphatic tissue or blood vessels. Although areca nut chewing can induce that cancer, areca nuts are believed to have strong antioxidant properties. Due to the current interest in the apoptosis effects for oral cancer treatment, we investigated the apoptosis and caspase-3 activities of areca nut extract on the oral cancer cell lines HSC-2 and HSC-3.

**Methods:** We examined the effect of areca nut extract on apoptosis and caspase-3 activities in HSC-2 and HSC-3 cells. Flow cytometry was used for counting the cells that underwent apoptosis and had the expression of caspase-3 enzyme for 24 and 48 hours.

**Results:** Areca nut extract induced a significant increase ( $p < 0.01$ ) in late apoptosis and caspase-3 activities after 24 and 48 hours of exposure in both cell lines, but an increase in the number of late apoptosis and caspase-3 activities in HSC-2 cells mostly occurred over 48 hours. The study also found that in HSC-3, there was a significant increase ( $p < 0.01$ ) in early apoptosis after 24 hours and late in 48 hours.

**Conclusions:** The study showed that areca nut extract has anticancer potential through its capability of inducing caspase-dependent apoptosis.

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