

## Optimization of arecoline extraction from areca nut using supercritical carbon dioxide.

### ABSTRACT

The mass transfer of arecoline using supercritical carbon dioxide (SC-CO<sub>2</sub>) from areca nut is studied by analyzing the diffusion coefficient derived from Crank equation for sphere model. Comparisons of the SC-CO<sub>2</sub> extracted yield under various conditions showed that the combination of pressure at 10.3 MPa and temperature of 50°C provided the optimum condition for extraction, followed by extraction at 40°C and 25.6 MPa. From the diffusion coefficient analysis, the optimum conditions also gave the highest coefficients. It was found that the yield is directly proportional to the values of the coefficients.

**Keyword:** Areca nut; Arecoline; Supercritical Carbon Dioxide; Mass transfer; Modeling.