

**Optimization of spray-drying parameters for the production of ‘Cempedak’
(*Artocarpus integer*) fruit powder**

ABSTRACT

‘Cempedak’ (*Artocarpus integer*) is an aromatic fruit that looks similar to jackfruit. Response surface methodology was used to optimize the spray-drying process to produce ‘cempedak’ fruit powder, with inlet air temperature (140–180 °C) and maltodextrin (DE 10) concentrations (5–15% w/w) as independent variables. Statistical analysis revealed that these variables significantly affected process yield, moisture content, water activity, hygroscopicity, L* value of powder and carotenoid content. Inlet air temperature had a negative correlation with all significant variables. At the same time, maltodextrin concentration was found to be positively correlated with all significant powder variables except process yield and moisture content. The recommended optimum spray-drying conditions for drying ‘cempedak’ juice were inlet air temperature and maltodextrin concentration of 160 °C and 15% (w/w), respectively. Under optimized spray-drying conditions, the yield of ‘cempedak’ powder was 60.5%, with moisture content, water activity, hygroscopicity and carotenoid content of 6.07%, 0.22, 25.8 g/100 g and 1.00 mg/g, respectively.

Keyword: Spray-drying; Cempedak’ powder; Inlet air temperature; Maltodextrin concentration; Response surface methodology; Properties