

Evaluation on moisture extraction of Malaysian *spratelloides gracilis* cracker by using heat pump dryer

ABSTRACT

Fish cracker is one of Malaysian traditional snack food. The cracker has a huge potential to be marketed globally. However, it is obstructed by hygienic issue during preparation. Traditionally, open sun drying was used for moisture extraction, but this method exposed to contamination from bird, insect and dust. To overcome the problem, an alternative drying method was introduced by using the heat pump dryer. The purpose of this work is to evaluate drying of Malaysian *Spratelloides Gracilis* fish cracker originated from Kemaman. The dryer consists of drying chamber, fan, heater, and compressor. Multilevel drying trays equivalent to 7.43 m² drying area was arranged inside the chamber. The evaluation started by measuring drying time, electricity consumption, weight, and moisture reduction. Changes of the cracker was observed and performance of the dryer was determined. At the end of this report will discuss the economic aspect by estimating annual return of investment and payback period. Result shows moisture and weight reduction are 42.9 % and 6.0 kg, respectively. Drying completed in 4 hours consuming 5 kWh electricity. Physical observation shows significant changes on dried cracker in terms of color, size, and shape. Dryer performance determined by evaporative capacity (1.5 kg/hr), specific moisture extraction rate (1.2 kg/kWh), specific energy consumption (0.8 kWh/kg), drying cost (1.09 RM) and specific drying cost (0.17 RM/kg). Based on electricity cost, selling price and production, replacing open sun drying with heat pump drying method will not affect much the new selling price because drying cost is only 0.6 %. Payback period of the dryer also estimated as 1.1 year.