Optimasi Suhu dan Waktu Modifikasi Pati Biji Mangga Teknik *Heat Moisture Treatment* dan Aplikasinya pada *Snack Mie*

Optimization of Temperature and Time of Mango Seed Starch Modification Using Heat Moisture Treatment Technique and its Application in Snack Noodles

Dr. Ir. Silvia Oktavia Nur Yudiastuti, S.TP., M.TP.

Dewi Ratna Dwita
Study Program of Food Engineering Technology
Majoring of Agricultural Technology
Program Studi Teknologi Rekayasa Pangan
Jurusan Teknologi Pertanian

ABSTRACT

Mango seeds are fruit waste that are often discarded and have not been optimally utilized. On the other hand, the kernel part of the mango seed contains about 65% starch and has potential as a nutritious local starch source. This study aims to optimize the utilization of mango seed starch through Heat Moisture Treatment (HMT) modification and its application in snack noodle products. The study employed Response Surface Methodology (RSM) using a Central Composite Design (CCD) approach to optimize the HMT modification, with temperature (90, 100, and 110°C) and time (80, 160, and 240 minutes) as factors, and starch content, swelling power, and solubility as the three response variables. Based on the analysis using Design Expert 13, the recommended models were quadratic for swelling power and 2FI (Two-Factor Interaction) models for starch content and solubility. The model analysis showed that temperature and time had a significant effect on all three responses. The optimum condition was achieved at a temperature of 93.373°C and time of 112.771 minutes, which was predicted to produce 70.058% starch content, 16.121 ml/g swelling power, and 0.478% solubility. Increasing the temperature and duration of HMT treatment led to a decrease in yield up to 50.55%, a reduction in lightness (L) and yellowness (b), and an increase in redness (a). HMT also reduced syneresis (%) by up to 38.49%. In the snack noodle product, the moisture content was 2.6%, ash content 1.7%, protein 23.26%, carbohydrate 61.40%, and fat 11.04%. The hedonic quality test showed color and texture parameters close to a score of 3, while aroma and taste approached scores of 4 to 5. The most preferred attributes in the hedonic test were aroma and taste with scores of 4, while color and texture received scores of 3 or slightly liked.*

***Keywords**: Mango seed, starch, temperature and time, Heat Moisture Treatment (HMT), snack noodles*