Application of a Plackett-Burman Design for Screening Raw Materials Mainly Affecting the Properties of Mum (Thai Fermented Sausage)

Attapol Sutjaritrak¹, Pairote Wiriyacharee¹,²,³, Pattavara Pathomrungsiyounggul*, Charin Techapun¹, and Puangtong Jaisun¹

¹School of Agro-Industry, Faculty of Agro-Industry, Chiang Mai University, Chiang Mai 50100, Thailand
²Science and Technology Research Institute of Chiang Mai University, Chiang Mai 50200, Thailand
³Center of Excellence in Microbial Diversity and Sustainable Utilization, Faculty of Science, Chiang Mai University, Chiang Mai 50200, Thailand

*Corresponding author: E-mail: pattavara.p@cmu.ac.th
https://doi.org/10.12982/CMUJNS.2020.0008

Received: March 12, 2019
Revised: June 4, 2019
Accepted: June 7, 2019

ABSTRACT

The objective of this study was to screen the factors that play an important role on quality of Thai fermented sausage (Mum) by using the Plackett-Burman screening design. The studied factors included 5 ingredients for Mum production namely minced garlic, roasted rice powder, salt, ground glutinous rice and sodium nitrite and 4 starter culture species, Pediococcus acidilactici KK3, Weissella cibaria CM7, Lactobacillus plantarum subsp. plantarum CP1, and L. plantarum subsp. plantarum KK6. According to the experimental design, twelve treatments of Mum were produced and then analyzed for sensorial quality (color, odor, homogeneity, hardness, sourness, saltiness and overall acceptability), pH, total acidity and texture (shear force). The analysis showed that among various studied factors, salt, sodium nitrite and P. acidilactici KK3 were the main factors influencing Mum quality.

Keywords: Fermented sausage, Ingredient, Mum, Plackett-Burman design, Quality of sausage, Starter culture

INTRODUCTION

Mum is a traditional fermented sausage mainly produced in northeastern region of Thailand. Its major compositions include minced meat and minced