Abstract

Cheese is a dairy-based ingredient that is popular but commonly related with several problems including lactose intolerance and lifestyle preference. Alternatively, plant-based cheese is frequently developed from legumes which possess anti-nutritional compounds and undesirable beanie flavor. This study aims to explore the feasibility of plant-based cheese analogue development from coconut milk, a derivative of coconut palm (Cocos nucifera L.) which consist of abundant nutritional value. Furthermore a study regarding the most suitable acidic conditions for coconut milk protein precipitation will be conducted, followed with its formula optimization using response surface methodology (RSM) and calcium fortification. Several parameters were assessed including the physicochemical, proximate, texture profile, and sensory properties in every part of the study. Among the acidic conditions, pH 4 was able to precipitate coconut milk's protein with a significantly higher protein content at 19.66% and having no significant effect towards other properties. From a total of 21 responses, the RSM determined that there were 3 significantly affecting responses namely umami taste & cheese flavor liking, as well as protein content with the error percentage value of 11.93%, 5.4%, and 4.4%, respectively. Moreover, the cheese analogue was found to be optimal with the incorporation of 86% coconut protein, 5% nutritional yeast, 8% rice flour, and 1% salt. Calcium fortification also significantly affected the texture profile of the cheese analogue while significantly reducing its appearance liking. Lastly, an acceptance rate of 80% was achieved from 250 panelists towards the final product of coconut milk cheese analogue.

Keywords: Calcium fortification; Cheese; Coconut milk; Coconut-Based cheese; Consumer acceptance evaluation; Plant-Based cheese; Response Surface Methodology (RSM)