Developing a Powder-based Formula of a Scrambled Egg Vegan Analogue: Suitability of Cowpea and Soybean Flours and Palsgaard® DMG 0093 Powder

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Fast growth of sales of plant-based foods indicates their better demand over traditional meats and animal-based products. In many countries, percentage of consumers opting for vegan diets has increased, as reflected by the growth of vegan food market. As busy lifestyles of consumers restrict making healthy food choices, this study focused on developing a ready-to-cook powder-based formula of a scrambled egg vegan analogue (SEVA). Four formulae were prepared using cowpea flour (CF) and soybean flour (SF) in different ratios (100% CF, 3:1-CF:SF, 2:1-CF:SF and 1:1-CF:SF) as treatments in triplicate. Liquid soy lecithin (LSL), turmeric powder, baking powder, baking soda, carboxy methyl cellulose, citric acid powder, salt, coconut oil and coconut milk were used in equal proportions to prepare SEVAs. The best formula selected based on hardness of SEVAs. Hardness of the four SEVAs were significantly different ($P<0.05$), and the formula (1:1-CF:SF) resulted in the lowest hardness was selected for further experiments. The selected formula (1:1-CF:SF) containing LSL was used as the control and formulae containing three levels of Palsgaard® DMG 0093 (PDMG-0093) powder (1.0, 0.5 and 0.1%) were used as treatments in triplicate. Oil absorption capacity (OAC) and water holding capacity (WHC) of the control and treatments were measured. OAC of the three treatments was not significantly different ($P>0.05$) from the control. However, WHC of the formula containing 1.0% PDMG-0093 powder was not significantly different ($P>0.05$) from the control. Therefore, 1.0% PDMG-0093 was found to be suitable for producing a powder-based ready-to-cook formulation for preparing SEVA. Proximate composition and water activity of the formula containing 1.0% PDMG-0093 powder was analyzed. Moisture, crude protein, crude fat, crude fiber and total ash percentages of 8.48 ± 0.02, 34.7 ± 0.66, 17.79 ± 0.44, 1.02 ± 0.09 and 6.99 ± 0.18, respectively, and water activity of 0.707 ± 0.002 (22 ºC) were evident.

Keywords: Cowpea, Palsgaard® DMG 0093, Scrambled egg vegan analogue, Soybean, Soy lecithin

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