SP24-37

Effect of addition of milk powder, seasoning and salt on physicochemical and organoleptic characteristics of taro instant porridge

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Introduction: Diversity of breakfast meal products is rather limited, since they are still mostly made of cereals including expensive wheat commodity. The breakfast meal products can probably be diversified using porridges made of some local commodities such as taro available in many tropical countries. Among ingredients often used for the recipe of instant porridge, the level of milk powder, seasoning and salt are usually essential for the final taste of the product. The objectives of this study were then to investigate the effect of these ingredients on the final physicochemical and organoleptic characteristics of taro instant porridge.

Materials and Methods: In addition to the composite flour made of 50% taro, 30% of banana and 20% of mung bean, various amounts of seasoning (0.5 to 2%), milk powder (2.5 to 10%), and salt (0.5 to 2.5 %) were used. Composite flour and material were mixed and being added with water (3:1) and 5 % of cooking oil. The slurry was then mixed for 5 min prior to precooking for 15 min, to get an heavy slurry. After slurry drum-drying, the milk powder, seasoning and salt were incorporated to improve porridge taste. Some moisture, ash, fat, protein, and carbohydrate content analyses were done, in addition to some hedonic scale scoring investigation. A response surface method with a composite design was used.

Results: Indonesian consumers are usually expecting some breakfast foods, which can provide a relatively high amount of carbohydrates and proteins, and a low amount of fat being later provided by their main dish. However, the formulation of porridge made of taro received the highest hedonic scores while incorporating relatively high amount of lipids and proteins. As expected, the mung bean commodity was efficient to provide a good source of proteins, synergistic to milk powder proteins. Unexpectedly, the carbohydrate content in the porridge seemed not to significantly affect the hedonic scoring. In addition, the composition in water, and ash did not help to get an optimal hedonic scoring for the formulation, and was mostly inconclusive. Dairy proteins in the form of milk powder, seasoning and salt were revealed effective to get an optimal hedonic score, which in turn could help for the potential consumer acceptability of taro instant porridge.

Conclusion: The present investigation confirmed the interest of some earlier trials, where using taro, banana, and mung bean could be suitable for the formulation of instant porridge. According to the polynomial model of prediction, the formulation using 6.3% of milk powder, 1.25% of seasoning and 1.5% of salt was found suitable to get an optimal hedonic scale response. Some complementary sensory trials will be later needed for confirmation.

Keywords : Instant porridge, composite taro flour, respon surface methodology