ABSTRACT

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UTILIZATION OF YAM BEAN (*PACHYRHIZUS EROSUS* L.)-DERIVED PRODUCTS AS A PREBIOTIC SOURCE IN SYNBIOTIC YOGHURT

(xiv + 139 pages: 9 tables, 24 figures and 13 appendices)

The production of synbiotic yoghurt in Indonesia has not been applied widely by the local yoghurt manufacturers because of limited access and expensive raw materials of the prebiotic compounds. Yam bean or bengkuang has been known to have the prebiotic compound where the plants are grown widely thus easy to be accessed. Previous study has showed that yam bean-derived products can substantially increase the number of probiotic bacteria and increase the physical properties of yoghurt. In this research, the objective was to select from three kinds of yam bean-derived products (yam bean puree, yam bean powder, and yam bean waste powder) that exhibit the highest prebiotic activity with two types of probiotics (*Lactobacillus acidophilus* and *Bifidobacterium bifidum* or combination of them) through a synbiotic mechanism. The result showed that the highest prebiotic activity was obtained from the combination of both probiotics (1:1) with yam bean powder as the prebiotic source. This result was used as the basis for the yoghurt production using different types of milk (full cream, skim milk, and combination of them i.e. 1:1) and for determination of a suitable concentration of yam bean powder by using 0, 1.5, 3, 4.5, 6%. The addition of the yam bean powder until certain concentration increased total plate count and total titratable acidity, and prevented syneresis in yoghurt made from skim milk. The results also showed that the best synbiotic yoghurt was prepared by a combination of milk with 3% yam bean powder concentration with the highest number of total lactic acid bacteria, exerted good yoghurt physicochemical properties and has higher overall acceptance score as compared with other synbiotic yoghurts. The selected yoghurt met the SNI and Codex standard in terms of total cell counts (lactic acid bacteria) after 21 days of cold storage. Taken all together, this synbiotic yoghurt can be recommended to be produced for consumption.

Keywords: Synbiotic, yoghurt, yam bean, *Pachyrhizus erosus*, *Lactobacillus acidophilus*, *Bifidobacterium bifidum*, lactic acid fermentation

References: 69 (1983-2012)