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KEY WORDS : GARBAGE / VEGETABLE WASTES / DIETARY FIBER / BREAD ENVIRONMENT

EKKAPHOP SUNGSUMRIT : FEASIBILITY FOR UTILIZATION OF VEGETABLE WASTES FROM MARKET AS A SOURCE OF DIETARY FIBER IN BREAD. THESIS ADVISORS : SANCHAI SUTIPANWIHAN, M.Sc., ANADI NITITHAMYONG, Ph.D., ADISAK AKESOWAN, M.Sc., 104 p., ISBN. 974-663-847-5.

Vegetable waste is organic-type garbage, high in moisture content, decomposing rapidly thus aggravating the pollution problem. However, vegetable waste contains dietary fibers, which may be beneficial to human health. This study attempted to extract the dietary fiber from vegetable wastes and use it to supplement bread. Sampling of vegetable wastes was done by quartering method. Vegetable wastes were then classified into four test samples: (I) holy basil, (II) celery cabbage, (III) holy basil : celery cabbage at a ratio of 30:70 and (IV) mixed waste comprising holy basil : celery cabbage : coriander : basil (hoary) : chinese cabbage : lettuce : corn (young) : sweet pepper : yard-long bean (green) : lvy gourd at a ratio of 10 : 22 : 9 : 8 : 10 : 12 : 10 : 6 : 5 : 8 respectively. The extracted fibers were added to bread at 5, 10, 15 and 20 % of bread flour respectively. All experiments were performed in a randomized complete block design.

The results showed that types of vegetable waste found in the market varied from day to day. When fibers were supplemented to bread, loaf volume decreased, while density increased and crust and crumb color darkened significantly at $p < 0.05$. Water activity of fiber-enriched bread was approximately 0.96 - 0.98. Sensory evaluation showed significant differences at $p < 0.05$ between control and fiber-enriched bread in terms of odour, flavour, texture and overall acceptability. All scores decreased with an increase in fiber level. The bread was acceptable when the level of supplementation was 10 % or less. The processing cost of fiber-enriched bread per one loaf (300 g) at 5, 10, 15 and 20 % addition showed that holy basil bread cost was 11.74, 12.58, 13.30 and 14.81 Baht; celery cabbage bread cost was 13.09, 15.08, 16.78 and 19.40 Baht; holy basil and celery cabbage bread cost was 12.78, 14.49, 15.96 and 18.32 Baht; and mixed waste bread cost was 11.98, 13.02, 13.92 and 15.62 Baht. In conclusion, it is possible to use vegetable waste as a source of dietary fiber in bread.