

Thesis Title Formulation of Pre-event Meals and Their Effect on
Endurance Performance in Athletes

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ABSTRACT

The pre-event meals were formulated using two different sources of carbohydrates i.e., (i) locally available maltose syrup and high fructose syrup, and (ii) imported maltodextrin and fructose powders. Sodium caseinate and soybean oil were used as sources of protein and lipid, respectively. The formulated meals were then fortified with vitamin B complex, vitamin C, sodium and potassium chloride into 2 types which were (i) milk-based including cocoa, coffee, and strawberry, and (ii) drinking yogurt-based including pineapple, orange, and lime. Sensory evaluation was done in 45 subjects using the balanced incomplete block design (BIB) and the least significant difference in order to analyze for the significant difference at $p=0.05$.

The results indicated that the cocoa flavored the pre-event meal from both carbohydrate sources were significantly most accepted with the scores of 6.46 and 6.29 on nine-point hedonic scale (1:dislike extremely; 5:neither like nor dislike; 9:like extremely), respectively. The scores of cocoa flavored both in milk based and drinking yogurt based also showed better suitability on some characteristics i.e., color, odor, taste, and viscosity on five-category just about right scale (1: much too weak; 3: just about right; 5: much too strong). The pre-event meal produced from locally available carbohydrate sources contained 76 % of total calories from carbohydrates, 9 % from protein, and 15 % from lipid, which were similar to the one produced from the imported sources; however the cost of the former one per 250 ml was 2.40 baht while the latter's was 3.45 baht.

The pre-event meals which were produced from both sources of carbohydrates were then tested for their effects on endurance performance in twelve male university athletes, compared with a non-caloric placebo. After the subjects had taken rest for 1 hour after consuming the meal; time to exhaustion was tested on a bicycle ergometer at 70 % of their maximum oxygen consumption (VO_2 max) until exhaustion. Respiratory exchange ratio (RER), blood glucose, insulin and lactate were analyzed before the consumption and every 15 minutes during the rest and exercise periods.

The rating of perceived exertion (RPE) was performed by interviewing each subject every 5 minutes during the exercise. It was found that time to exhaustion and RER in both of the pre-event meal were similar and not significantly different, despite being significantly greater in both of the pre-event meals compared to the non-caloric placebo. RPE was similarly changed and not significantly different in all products. Blood glucose and insulin were similarly changed and not significantly different in both the pre-event meals, while significantly higher compared to non-caloric placebo. Blood lactate was not significantly different in both the pre-event meals, while significantly greater at time 75 minutes when the non-caloric placebo was consumed.

The results suggested that subjects who consume the -- pre-event meal have more time before exhaustion and indicate better endurance performance compared to the subjects who receive non-caloric placebo.