

## **E2-67 Development of a sports drink using natural lime flavour**

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Sports drinks are consumed by athletes for their physiological benefits; supplying fuel for working muscles, enhancing performance and replacing water lost in sweating.

The present study reports on the development of a sports drink using both artificial flavours (lime, lemon) and natural flavours (lime juice). The chemical and sensory properties were also studied.

The process for formulation of the artificially flavoured sports drink included; preparation of colour intensity, use of pectin to increase turbidity and selection of lime-lemon flavour combinations. The process for the formulation of the natural sports drink (lime juice) involved; heat treatment of lime (77°C, 3 min), centrifugation (6000 rpm, 20 min) to control and eliminate bitterness. The bitter compounds limonin ( $R_f=0.32$ ) and naringin ( $R_f=0.64$ ) were detected by TLC. To the final products, sucrose (4.9 g/100ml), glucose (2.0 g/100ml), NaCl (36.6mg/100ml), KCl (21.5mg/100ml),  $CaCl_2$  (7.3mg/100ml),  $MgCl_2$  (4.4mg/100ml) and citric acid (20.0mg/100ml) were added.

Two "product-oriented" sensory studies using 12 trained panelists, were carried out (a) to evaluate the level of glucose (2g and 4g/100ml) and electrolytes to be added and (b) to compare the artificial, natural drinks with the reference sports drink available commercially (Sports plus).

The artificially flavoured sports drink and naturally prepared sports drinks contained the following chemical properties: Brix 10.3 and 9.4, acidity 0.32% and 0.3%, pH 3.2 and 3.1 respectively. The reference sample had a Brix of 7.44, acidity 0.27%, pH 3.2, sucrose 4.9g/100ml and glucose content of 2g/100ml.

The sensory study showed that the natural lime juice scored significantly higher in ranking than the artificially flavoured sports drink and the reference, when determined statistically by Friedman Test ( $p=0.05$ ). Addition of glucose at 4g/100ml was preferred.