

Studies on the development and storage stability of bitter gourd-lemon function RTS beverage

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SUMMARY : A blend of beverage from bitter gourd (*Momordica charantia*) and lemon (*Citrus limon*) was formulated and evaluated for its storage stability in Deptt. of Agriculture Engineering process of food engineering (Sam Higginbottom Institute of Agriculture, Technology and Sciences, Allahabad), in the year 2010-11. Addition of bitter gourd to lemon juice increases the nutritional value of the drink and also provides various health benefits to consumers. These ready-to-use functional beverages were prepared by blending different ratios of lemon and bitter gourd (100:0, 75:25, and 50:50). The physico-chemical parameters and sensory characteristics of blended beverage were evaluated for 2 months at 15 days of storage interval. It was observed that TSS mean values decreased (3.5-2.086%) during storage. Decrease in acidity (5.03-4.167%) and increased in pH (2.6-3.6) was also observed. Regarding sensory attributes, maximum scores (9) for overall acceptability was observed in lemon and bitter gourd ratio of 50:50 followed by ratio of 100:0 (7). Drink prepared at 50:50 was also found as the most acceptable in maintaining the physico-chemical and organoleptic characteristics as compared to other treatments.

KEY WORDS : Bitter gourd, Lemon, Blend

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The functional beverages can play an important role in health promotion and disease prevention. These reduce increasing burden on health care system by a continuous preventive mechanism. Beverages are considered to be an excellent medium for the supplementation of nutraceutical components for enrichment such as soluble fiber or herbal extract. Bitter gourd is botanically called *Momordica charantia* Linn. The genus *Momordica* belongs to family Cucurbitaceae. Bitter gourd also known as bitter cucumber, bitter lemon caraille, alligator pear, maiden apple coucouli, balsam pear or karela. It has good nutritional value with 2.1 g of protein, 4.2 g of carbohydrates 1.8 mg iron, 20 mg of calcium, 55 mg of

phosphorus, 210 IU of vitamin A and 88 mg of vitamin C per 100 gram of edible portion (Akryod, 1963). Usefulness of bitter gourd as food and medicine has long been known to people (El-Bartan *et al.*, 2006). Bitter gourd (*Momordica charantia* L.) is a popular vegetable in Asia and is used to prepare several dishes. They are highly nutritive and are relatively high in proteins, minerals and vitamins. Bitter gourd has already been reported as a good source of phenolic compounds, which possessed potent antioxidant activity (Budrat and Shotipruk, 2008; Aminah and Anna, 2011). It has some medicinal properties and is recommended for curing blood diseases, rheumatism, diabetes and asthma. It is very effective in inhibiting the growth of HL60 human leukaemia cells and this effect probably contribute in cancer prevention (Kobori, 2003). The aqueous juice of bitter gourd fruit has been shown to possess hypoglycemic activity (Sitasawad *et al.*, 2000). Lemon (*Citrus limon*) belongs to the family of Rutaceae. Lemon juice is very rich in vitamin C, a vitamin responsible for a series of health benefits.

Blending could lead to the production of delightful and delicious beverages with improve organoleptic quality and high nutritive value. Blending increases taste and flavour of fruit

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