

## **Studies on preparation and storage evaluation of Seabuckthorn (*Hippophae salicifolia* D. Don.) ready to serve beverage**

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Accepted : April, 2008

### **ABSTRACT**

Seabuckthorn berries were collected at ripe stage from natural population in Badrinath area of district Chamoli, Uttarakhand. Fruits, after thorough washing, were squeezed over a sieve to extract the pulp. The preserved pulp (with 500 ppm Potassium Meta bisulphate), was utilized for preparation of RTS beverages. The standardized recipe for the preparation of seabuckthorn RTS beverage contained 5 per cent pulp and 14 °Brix TSS. The beverages were stored for six months under ambient and refrigerated conditions and evaluated for physico-chemical and sensory changes. There was a significant increase in reducing sugars of the beverages during 6 months storage, while, the total sugars suffered some loss during storage. RTS beverage suffered slight but steady decline in acidity during storage whereas, ascorbic acid experienced loss of 76.46 per cent. The sensory scores for colour, taste and overall acceptability declined gradually during storage. All these physico-chemical and sensory changes were less in the beverages stored under refrigerated conditions, in comparison to their counterparts stores at ambient conditions. Further the prepared RTS beverage was acceptable upto 6 months of storage under both conditions with a slightly better liking for refrigerated drinks.

**Key words :** Seabuckthorn, *Hippophae salicifolia*, RTS beverages, Storage, Sensory quality.

**S**eabuckthorn (*Hippophae spp.*) is found in Jammu and Kashmir, Himachal Pradesh, Uttarakhand and Sikkim at an altitude of 7,000-12,000 ft amsl (Chauhan *et al.*, 2003). In Uttarakhand, the plant is mainly confined to the river beds of drier ranges of North-Western Himalayas consisting Sukhi, Harsil, Gangotri, Mandakini Ghati, Alaknanda Ghati and Jamuna Ghati, Badrinath, Har-ki-Dun, Kalli Valley, Gori Valley, Buddhi, Byans, Darma, etc. (Pokhriyal *et al.*, 2004. Yadav, *et al.*, (2006) reported that the main species distributed in Uttarakhand is *H. salicifolia*. Natural seabuckthorn forest can yield 750-1,500 kg of berries/ha. Seabuckthorn berries are a rich source of vitamin C, caretonoids, minerals, vitamin B, vitamin E and vitamin K, bioactive substances and organic acids (Rongsen, 1992). These small fruits are highly perishable in nature but have high acidity in the juice. This makes it suitable for purpose of beverage production, but low pH and high acidity makes the fruit unfit for direct consumption. Hence, processing seems to be the only alternative to utilize this highly nutritive and useful fruit.

So far, most of the work reported on the utilization of Seabuckthorn is on *H. rhamnoides*. The available information of the utilization of *H. salicifolia*, which is the main species found in Uttarakhand state, is scanty in the literature. Therefore, the present investigation was

conducted to standardize the recipe for the preparation of a vitamin rich RTS beverage from fruits of seabuckthorn (*Hippophae salicifolia* D. Don) and evaluate the prepared product for its storage stability.

### **MATERIALS AND METHODS**

Seabuckthorn berries were collected at optimum maturity (ripe stage) from natural population in Badrinath area (2879 m amsl, N 30°42.824' longitude, E 79°29.924' latitude and Aspect 75° SE) of district Chamoli, Uttarakhand, in the month of October, 2005 and brought to the laboratory of Department of Horticulture, Hill Campus, Ranichauri. Fruits, after thorough washing, were squeezed over a sieve to extract the pulp. For preservation, the pulp was heated to 95°C for 10 sec. followed by immediate cooling to room temperature and preserved with 500 ppm KMS. RTS beverages were prepared by using pulp @ 5.0, 7.5 and 10.0 per cent and maintaining TSS at 10, 12 and 14 °Brix. The prepared RTS beverages were served chilled to the taste panelists for evaluation on 9 point hedonic scale as detailed (9 like extremely, 8 like very much, 7 like moderately, 6 like slightly, 5 neither like nor dislike, 4 dislike slightly, 3 dislike moderately, 2 dislike very much, 1 dislike extremely). The best rated treatment combination was selected, optimized and used for the preparation of products on a larger scale. All the beverages were packed in 200 ml glass bottles and stored at two different conditions *i.e.* ambient (8-18°C and 55-