Abstract

Carrot (*Dacus carota*) is one of the promising sources of beta carotene the precursor of vitamin A. Recently, the nutritional content of food after preparation has become an important concern to health & food professionals. However, during several processing phases, the ultra structure of carotenoids and other complexes can be broken, exposing the pigments to adverse factors that can be lead to their destruction. This study aims to develop a carbonated carrot drink & to analyze the effect of carbonation on beta carotene level.

The optimum carbonation level of reformulated carrot drink was assessed through 9 point hedonic test organoleptically. Shelf life evaluation was performed physiochemically and microbiologically using the filter membrane technique. Separation & identification of Beta carotene were done by using column chromatography (Alumina activity III column) & thin layer chromatography (TLC) respectively. Quantification was done spectrophotometrically by using UV/Visible spectrophotometer set wave length at 450 nm.

Optimum ingredient amount to be added for preparing 200ml of drink was found to be 34 ml Carrot juice, 28 g Sugar, 0.3 g Citric acid, 0.02 g SMS & 0.6 g NaCl with good flavor enhancement capacity. Chemical analysis reveals that the best sample has pH 3.5, Brix 16.5 ^{0} & titratable acidity 0.15%. According to the sensory analysis results, 1.56 CO_2 volume was the best with acceptable mouth feel & effervescence. No significant change in physiochemical properties were observed during the two months storage period in both samples stored under ambient & refrigerated conditions. Drink was microbiologically safe for 2 months storage period. (Coliform, Yeast & Mold – Nil, Bacteria -7 per 1ml.)

Beta carotene amount in non-carbonated & carbonated carrot drinks at four different carbonation levels 0 , 1.48 ,1.56 ,1.86 ,2.09 Vol were 266.3 ± 26.1, 236.0 ±19, 290.7 ± 52.1, 263.3 ± 43.61 , 277.7 ± 58 (µg / 100ml) respectively. It was statistically proved that carbonation has no significant effect on beta carotene level in carrot drink ($p > 0.05$). Total carotenoids in non carbonated & carbonated carrot drinks at four different carbonation levels were 369.33 ± 9.45, 364.67 ± 9.87, 372.00 ± 15.10, 360.67 ± 6.11 & 374.70 ± 23.40 (µg /100ml) and there was no significant difference among those samples($p > 0.05$).The best sample selected from sensory analysis was at a carbonation level of 1.56 Vol and contained 290.7 ± 52.1 µg/100ml of beta carotene & 372.00 ± 15.10 µg/100ml of total carotenoids.