Degradation kinetics of water-soluble annatto extract and sensory evaluation of annatto colored yoghurt.

ABSTRACT

Norbixin (NB) is a water soluble coloring agent of annatto dye extracted from the pericarp of seed of Bixa orellana L. The stability of NB color in response to heat and light and quality of NB-fortified yoghurt were evaluated. Kinetic studies over a temperature range of 50°C to 100°C indicated that NB degradation followed 1 st order kinetics having rate constant and half life of 0.299 h -1 and 2 h, respectively, at 100°C and 0.033 h -1 and 21 h, respectively, at 50°C. The overall activation energy (E a) calculated over the temperature was 21.53 kJ/mol. Loss of color intensity under direct sunlight also followed 1 st order kinetics having rate constant of 0.024 h-1 and half life of 28 days. The light effect was found less severe than that of temperature. Yoghurt was prepared incorporating different level of NB color, and two-way ANOVA analysis of sensory evaluation scores showed that NB-added yoghurt were significantly different than that of control at $P<0.05$. Yogurt colored with 500 ppm NB was secured the highest scores with respect to all test preferences by the panelists. This study indicated that NB color was much sensitive to heat; and thus not suitable for heat- processed food products but showed excellent stability in low heat-processed products like ice-cream, chocolate, yoghurt, cheese etc.

Keyword: Annatto extract; Natural color; Norbixin; Stability; Temperature; Light; Yogurt.