Ashwini Gengatharan et al., J Food Process Technol 2016, 7:12 (Suppl)
http://dx.doi.org/10.4172/2157-7110.C1.056

The effect of betacyanins from red pitahaya on the physicochemical, antioxidant and sensory properties of yoghurt and ice cream

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The search for natural colorants has been driven by the growing evidence of the adverse health effects of synthetic colorants. Red pitahaya or red dragon fruit (*Hylocereus polyrhizus*) are well known for their deep purple color pulps due to the abundance of betacyanins and can be exploited as a potential source of natural food colorant. The application of betacyanins from red pitahaya to simulate strawberry-red color in two model food systems (yoghurt and ice cream) was evaluated in comparison to a commercial colorant from red beet, E-162. A greater loss of BC and total color changes was observed yoghurt containing E-162. However, an approximate 0.15% increase of BC was observed in ice cream containing betacyanins from red pitahaya or E-162 on day-21 of storage at -18°C. Throughout the 14-days or 21-days of cold storage, only a small difference ($\Delta E^* < 1.5$) was observed in total color changes of yoghurt or ice cream containing betacyanins from red pitahaya or E-162, respectively. The microbial viability (*Streptococcus thermophilus* and *Lactobacillus bulgaricus*) in yoghurt containing betacyanins was found to be better than that of plain yoghurt (without betacyanins). Yoghurts containing betacyanins (red pitahaya or E-162) were also found to have lower syneresis than that of plain yoghurt. Ice-cream containing betacyanins from red pitahaya was found to have higher overruns compared to those of plain or E-162 containing ice-cream while the apparent viscosity of ice-creams was not affected by the addition of betacyanins from red pitahaya or E-162. The addition of betacyanins from red pitahaya or E-162 was found to enhance the antioxidant properties of yoghurt and ice cream. The sensory evaluation of yoghurt and ice cream containing betacyanins from red pitahaya showed a better color acceptability compared to those containing E-162. Betacyanins from red pitahaya can therefore be used as a potential natural colorant to simulate strawberry-red color in yoghurt and ice cream.

Biography

Ashwini Gengatharan has recently graduated with a PhD majoring in Food Science from Monash University Malaysia. She was under the supervision of Dr. Wee Sim Choo and Professor Gary A Dykes at the School of Science. She has completed her BSc in Biotechnology from AIMST University, Malaysia and has obtained her Master's in Biotechnology from Macquarie University, Australia. Her areas of research interest are mainly on the production of functional foods and application of plant secondary metabolites in food processing to improve consumer food products.

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