

Variations of colour, total carotenoid and astaxanthin levels in fillets of Asian seabass (*Lates calcarifer*) with the post-harvest time

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Freshness and nutritive quality determine the market value of food fish. Asian seabass fetches high price both in local and export markets due to their colour, texture, taste and high nutritive value. Present study investigated seabass fillet freshness through color and nutritive quality changes measured by total carotenoid (TC) and astaxanthin content at different post-harvest times (7h, 9h, 11h, 13h, and 7-days) to develop a consumer-friendly colour chart for freshness determination. Parameters were collected in triplicates at room temperature ($27 \pm 1^\circ\text{C}$) from randomly caught cage-cultured fish and wild seabass fish fillets (2.0 - 2.5 kg weight, 35-50 cm total length) in Batticaloa Lagoon (n = 10 & 05, respectively). After one-week of freezing (-10°C), same parameters were recorded. Chromometer readings; L*-lightness, a*-redness, b*-yellowness (International Commission on Illumination (CIE values)) were recorded in the fillets and these values were converted to RGB values to develop colour chart using Matlab software. TC and astaxanthin contents of fillets were analyzed using standard procedures. Astaxanthin and TC levels were significantly reduced ($P < 0.05$) with post-harvest time except TC in wild fish fillets. Levels of astaxanthin and TC at 7-hour post-harvest time were significantly higher than those of 7-day post-harvest time ($P < 0.001$). With post-harvest time, CIE values revealed no significant differences indicating limited change in fillet colour. The study's developed colour chart reflected the same confirming that the post-harvest colour changes were indistinguishable to the naked eye. This study revealed that seabass fillets maintain consistent colour for 13h of harvesting under frozen conditions, while nutritive quality of fillets has significantly reduced over time.

Keywords: Asian seabass, colour chart, fillet freshness, nutritive quality, post-harvest changes

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