

## P01

### Seasonal variations of total lipid and n-3 polyunsaturated fatty acid contents in Jade Tiger hybrid abalone

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**Background** – Seafoods are rich sources of long chain omega-3 polyunsaturated fatty acids (LC n-3 PUFA). These fatty acids (FA) have been reported to be associated with a broad range of health benefits. Blacklip, greenlip and hybrid Jade Tiger abalone (blacklip x greenlip) are the three main types of abalone farmed in Australia. There are no data published on the seasonal variations of FA and lipids in three different tissues of hybrid tiger abalone.

**Objective** – To investigate the seasonal variations of total lipid and fatty acid contents in muscle, gonad and digestive gland of Jade Tiger abalone.

**Design** – Muscle, gonad and digestive gland of abalone obtained from Great Southern Waters farm, Victoria were analysed. The total lipid was extracted with methanol-chloroform containing butylated hydroxytoluene. The FA methyl esters were prepared by saponification of 20mg lipid plus 2mg of methyl tricosanoate using KOH followed by transesterification in BF<sub>3</sub> in methanol. The FA methyl esters were separated by GLC. Two-way ANOVA were performed to determine differences in individual FA level between different seasons and tissues.

**Outcomes** – The total lipid content of muscle varied significantly between the seasons, with summer having the highest concentration, followed by spring and winter. In both gonad and digestive gland, lipid content was higher in winter than in other seasons. Total saturated fatty acid (SFA), monounsaturated fatty acid (MUFA), and n-3 and n-6 PUFA contents of muscle were higher in spring than in other seasons. The contents of total SFA and MUFA of gonad and digestive gland were the lowest in autumn. The highest total n-3 and n-6 contents of gonad and digestive gland were found in winter and the lowest in summer. The two predominant n-3 PUFA were eicosapentaenoic acid and docosapentaenoic acid. The higher contents of both were found in spring and winter for all three tissues.

**Conclusion** – The seasonal differences may be caused by several biological and environmental factors such as lifecycle and variation of water temperature.

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