Distribution on n-3 polyunsaturated fatty acids in different edible portions of the blue swimmer crab (*Portunus pelagicus*)

M Sullivan[1], XQ Su[1], D Li[2]

[1]*School of Life Science and Technology, Victoria University of Technology, St Albans, VIC, 3000*
[2]*Department of Food Science, RMIT University, Melbourne, 3000*

Marine products contain high levels of n-3 polyunsaturated fatty acid (PUFA), docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), which have been found to have beneficial effect for human health. The aim of this study was to examine the fatty acid content between different edible portions of the Australian blue swimmer crab, since there was no previous data on fatty acid profile on different portions of this species.

We have analysed lipid content and n-3 PUFA and other fatty acids in muscle, gonad and hepatopancreas in blue swimmer crab (Portunidae: *Portunus pelagicus*). The total lipid was extracted with chloroform : methanol (2:1 v/v) containing 10 mg/L of butylated hydroxytoluene and 0.2 mg/mL of tricosanoic acid (C23:0) as an internal standard. The methyl ester of fatty acids was prepared by standard methods. The fatty acid methyl esters were separated by capillary gas liquid chromatography.

Fatty Acids (mg/100g)	Muscle	Gonad	Hepatopancreas
18:2	10.7 ±6.7	42.6 ± 26.1	85.0 ± 28.7
20:4	40.9 ± 3.3	157.6 ± 66.6	278.8 ± 51.4
22:4	–	59.0 ± 36.8	112.8 ± 28.9
22:5	–	18.3 ± 7.6	51.5 ± 17.3
Total n-6 PUFA	6.9	46.8	96.1
18.3	–	11.6 ± 10.4	16.2 ± 15.0
20:5	118.2 ± 38.1	276.5 ±167.5	324.5 ± 95.6
22:5	–	74.9 ± 54.9	106.5 ± 25.3
22:6	48.3 ± 12.9	176.8 ± 138.8	209.0 ± 63.4
Total N-3 PUFA	23.8	83.1	123.8
n-3/n-6 ratio	3.5	1.8	1.3
Total lipid (g/100 g)	1.2	4.6	12.2

The above table contains the data of main omega-6 and omega-3 fatty acids, the n-3/n-6 ratio and the total lipid content in three edible portions of the blue swimmer crab. The results indicate different fatty acid levels between the muscle, gonad and hepatopancrease and significance was determined using an ANOVA. Of the individual fatty acids, a significant difference ($P < 0.01$) was found for both 18:2 and 22:4 n-6 PUFA between the different edible portions, which in both fatty acids were highest in the hepatopancreas and lowest in the muscle. The results indicated that all n-3 PUFA were significantly different ($P < 0.01$) between the edible portions with again the hepatopancrease containing the highest levels and the muscle containing the lowest. Total n-6 was not significantly different overall between the three edible portions however n-3 showed a significant different between these portions. The hepatopancreas was also significantly higher in lipid content while muscle contained the least. Muscle had a higher ratio of n-3/n-6 at 3.5 compared with 1.8 for gonad and 1.3 for hepatopancreas.