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PE-18 Do fatty acid profiles help to explain sesarmid crabs food choice?

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Sesarmid crabs are the most abundant organisms of the benthic fauna inhabiting mangrove ecosystems. These leaf-eating mangrove crabs are extremely dependent on the mangrove litter (leaves and propagules). Leaf materials are an inadequate diet given that, irrespective of their stage of senescence and decomposition, it contains a low nitrogen content. Therefore, leaf-eating crabs have to supplement their diet with nitrogen from other sources (Skov and Hartnoll, 2002). These sources include algae, bacteria, their own faeces colonized by macroorganisms, or surface sediments (Micheli, 1993; Lee, 1998; Andresen and Kristensen, 2002). Previous studies have suggested that crabs show food selective preferences depending on the nutritional values, food varieties and accessibility (Dahdouh-Guebas et al., 1999; Meziane et al., 2002).

The critical value of 17:1 for C:N ratio has often been used as a point of comparison to determine nutritional value in food. Dietary C:N ratios above 17:1, are considered to be under the nutritional requirement. However, crabs were reported to consume plant litter with C:N ratios ranging from 25:1 to 183.5:1 (Linton and Greenaway, 2007 and therein). Therefore, the choice of crabs in the consumption of mangrove litter is unclear. Fatty acids (FAs) are widely used as biomarkers to examine the sources, fate and transformation of organic matter and their contribution to the sediment organic matter pool (Meziane et al., 2002). These compounds are important due to their role in the transfer of carbon and energy through food webs and in regulation of metabolic processes in marine ecosystems (Müller-Navarra et al. 2000). We use a combination of the FAs approach and C:N ratios to evaluate the nutritional value of food, its assimilation and fates. The rates of consumption, corresponding faecal production and assimilation efficiency (AE) were also calculated.

In the laboratory, *Perisesarma bidens* were offered different diets (*K. obovata* leaves, propagules and algae [*Enteromorpha intestinalis*]). The results showed significantly lower consumption and assimilation rates when crabs fed on propagules, but no significant differences between leaves and algae. When offered a mixed diet, male crabs preferred algae > leaves > propagules, while a female preference for algae = leaves > propagules. The C:N ratios of food materials were lower in algae (14) < leaves (46) < propagules (85). FA profiles of food types revealed a significant difference in polyunsaturated FAs (PUFAs), in particular linoleic acid family (6), however, we found no differences in linolenic family (3) between leaves and algae. FAs comparison of tissues and faeces indicated that crabs efficiently assimilate essential FAs (EFAs) from a given diet in the order of algae > leaves > propagules. EFAs in particular, 20:4 6, 20:5 3 22:6 3 were assimilated as indicated by the increased levels in tissues and depleted in the crab faeces. These EFAs are known to play key role in the physiological processes and growth of marine animals. Our data suggest that combination of FAs profiles and C/N ratios provide a better understanding of the choice of diet by sesarmid crabs.