

BIOCHEMICAL COMPOSITION OF PROCESSING DISCARDS OF DEEP-SEA SHRIMP *SOLENOCERA CHOPRAI* CAUGHT FROM KERALA COAST, INDIA

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ABSTRACT : Shrimp, one of the important commodities in the India's export market, has witnessed rapid growth and hence commercial processing of shrimp discards huge amount of waste material. The waste materials include cephalothorax, exoskeleton, viscera and muscle remnants which create a serious threat to the environment. The biochemical composition of the processing discards from *Solenocera choprai* (ridgeback shrimp) was analysed in the present study. *Solenocera choprai*, a commercially important shrimp species, was identified by its morphological and molecular features. Proximate analysis of shrimp waste has revealed presence of high protein (10.94%) and ash (9.3%) contents, but low lipid content (0.27%). The sample was also found to be a rich source of ω -6 PUFA and ω -3 PUFA with saturated: unsaturated fatty acids ratio of 1: 0.48. Major ω 3 fatty acids seen in sample were eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). The essential amino acid, arginine and non essential amino acid, glutamic acid, are found to be present abundantly in the sample. The sample was found to be rich with essential minerals such as Calcium, Phosphorus, Magnesium, Iron and Sodium. Our findings revealed that the processing waste of *Solenocera choprai* can be a good source of protein, poly unsaturated fatty acids and minerals and can serve as an alternative source for high quality nutritive compounds for human consumption.

Key words : DNA barcoding, proximate, fatty acid, amino acid, waste, shrimp

INTRODUCTION

Nowadays, the definition of waste management has entirely changed from management of waste to conversion of waste material into useful product which is a part of eco-friendly and cost-effective waste management. The composition of the waste is critical for the determination of the appropriate handling and management of the waste. Globally, the shellfishery waste ranges to about 6 to 8 million metric tons annually (Gao *et al*, 2016). The commercial forms of shrimp vary with the species and consumer. Three main commercial forms of shrimp that generate waste are headless, peeled and tail-on. Among this, headless shrimp generates only the head but peeled shrimp generates maximum waste, which includes head and full shell and in tail-on generate head and shell of shrimp without tail fin. The exoskeleton and the cephalothorax consist of 47% and 35–45% of raw material respectively. Together, they constitutes 70% (w/w) of the raw material weight (Simpson and Haard, 1985). Cephalothorax, exoskeleton, viscera which constitutes the major shell waste material can leads to environmental pollution when their disposal is not proper (Mezzomo *et al*, 2013). As these waste materials are rich in ω -3 fatty acids, high-quality protein, chitin, minerals,

pigments such as astaxanthin, they can be recovered effectively by employing proper extraction techniques. There lies a great interest in developing value-added products from these waste materials for human use owing to their economic importance (Sánchez-Camargo *et al*, 2011).

Solenocera choprai (ridgeback shrimp), a penaeid shrimp (family – Solenoceridae) is widely distributed in the Indo-Pacific and reported mainly from India, Pakistan, Malaysia, the Philippines, Indonesia, Taiwan, Thailand, north-east and northwest Australia, the eastern coast of Africa, Madagascar, the Gulfs of Suez and Arabia (Carpenter, 1998). *Solenocera choprai* is one reported to be one of the important commercial species in 60–100 m depth zone off Mangalore coast (south India), India. (Dineshbabu and Manissery, 2008). Along Kerala coast, Nandakumar *et al* (2001) reported that the fishing season for this species is during October-November and February-May. Industrial level processing of *Solenocera choprai* in Kerala and neighbouring states create the processing discards. Though this species is available in Kerala coast, the biochemical composition of this species and its processing waste is not well established.

In this study, we have analysed the composition of