

Medicinal role of shark liver oil against human ailments

Shark liver oil has been used for centuries as a folk medicine in India and abroad. Deep sea sharks are considered as good source of liver oil, since the liver of these species can account for up to 20% of their total weight. Shark liver oil is a rich source of squalene, squalamine, mono unsaturated fatty acid (MUFA), poly unsaturated fatty acid (PUFA), vitamin A, vitamin E, and alkyl glycerols, many of which are known for their immunological properties.

Bramble shark (*Echinorhinus brucus*) (Fig. 1) belongs to the family Echinorhinidae and typically seen at depths of 400 - 900 m of ocean. Bramble shark is known for its rich content of liver oil and this species is not included in the list of endangered fish species according to Zoological Survey of India, Ministry of Environment and Forests, Government of India.

Nutritional parameters such as proximate composition, amino acid and fatty acid profiles

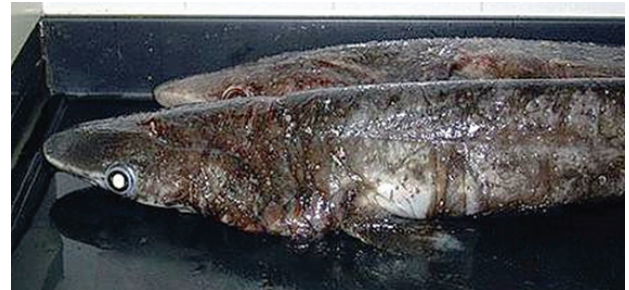


Fig. 1. Bramble shark (*Echinorhinus brucus*)

of Bramble shark were analyzed in the Bio-chemistry and Nutrition Division of ICAR-CIFT, Cochin. Experiments on antiulcer and anti-inflammatory properties of liver oil from Bramble shark have been carried out in animal models revealing its biological activities against the said ailments.

Chloroform-methanol extraction of shark oil

Oil was extracted from Bramble shark liver (60 g) following the method of Folch *et al.* (1957) and Sankar *et al.* (2010). The oil was purified and

used to evaluate various bio-activities.

Animal study

Anti-inflammatory and anti-ulcer effects of Bramble shark were evaluated in experimental models of male albino rats.

Anti-inflammatory effect

Anti-inflammatory effect of liver oil extracted from *E. brucus* was determined by formalin-induced rat paw edema test. Significant reduction of paw edema was observed in oil-treated rats and the activity was comparable to standard drug. Oil-treated subjects also showed significant reduction of paw size compared to untreated rats (Fig. 2). The result showed good anti-inflammatory potential of shark liver oil (Mathew *et al.*, 2008).

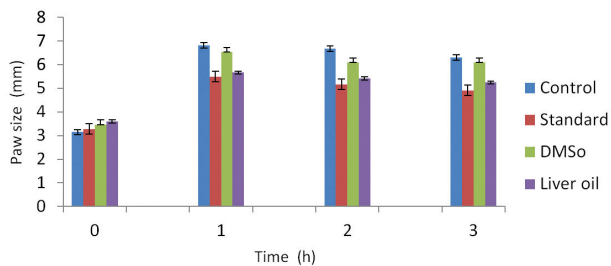


Fig. 2. Anti-inflammatory effect of shark liver oil as shown by reduction in rat paw edema

Anti-ulcer effect

Anti-ulcer effect of the liver oil was evaluated in animal model using albino rats. Hydrochloric acid (0.6% v/v) was used as ulcerogenic agent which was administered orally at the rate of 2.0 ml/kg body weight (Ganesan *et al.*, 2010). Significant anti-ulcer effect as seen in stomach lesion photographs was observed in oil treated animals, whereas vehicle (DMSO) showed no preventive effect (Fig. 3).

Conclusion

Bramble shark is nutritionally rich and the liver oil is proved to contain anti-inflammatory and anti-ulcer properties. Shark liver oil has been used as folk medicine by humans since ancient

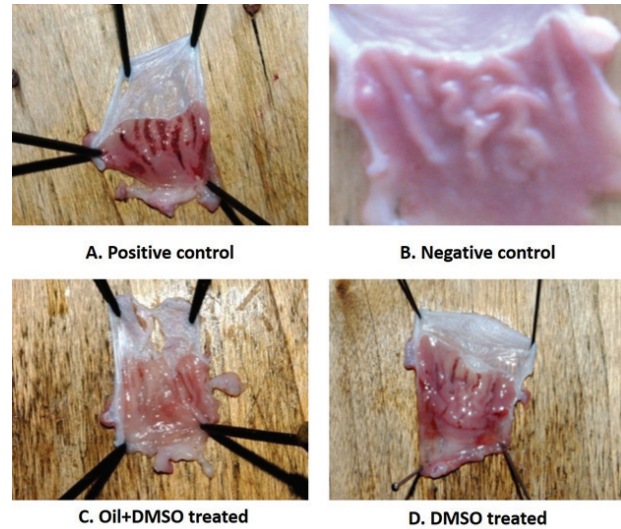


Fig. 3. Stomach lesion showing anti-ulcer effect of shark liver oil

times. Through the study, anti-inflammatory and anti-ulcer activities of oil derived from Bramble shark (*E. brucus*) were observed. Shark liver oil is rich in micronutrients like n-3, n-6 fatty acids, alkyl glycerols, vitamins and sterol derivatives which may have contributed to the anti-inflammatory and anti-ulcer properties.

References

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