

## **Analysis of Reproductive Health of Male Indian Mackerel (*Rastrelliger kanagurta*) From Two Wet Markets in Shah Alam**

Muhammad Firdaus Shafie<sup>a</sup>, Mohd Azham Yahya<sup>d</sup>, Nur Hilwani Ismail<sup>abc\*</sup>

### **Structured Abstract**

**Background:** Concerns are growing among marine biologists about the reproductive health of the Indian Mackerel (*Rastrelliger kanagurta*). Factors like pollution and changes in water temperature can significantly affect their ability to reproduce successfully. This study focuses on understanding the relationship between physical characteristics of male *R. kanagurta* and their reproductive health respectively. It also examines the structure of their testes and the contents of their stomachs to provide insights into their overall health and diet and its effects on the reproductive health of the fish.

**Methods:** The samples, male *R. kanagurta*, were collected from two wet markets in Shah Alam, (M6 and M16). The morphometric measurements of the samples were measured by using digital calipers. Then, the reproductive system was dissected, and the testes were analyzed histologically. This process involved preserving the samples in 10% formalin, embedding them in paraffin wax, sectioning them, and staining with hematoxylin and eosin. Stomach contents were examined with a stereoscopic microscope to identify the diet composition.

**Results:** Fish from market M16 generally have a higher mean weight ( $172.1 \text{ g} \pm 5.39 \text{ g}$ ) compared to those from market M6 ( $144.2 \text{ g} \pm 8.16 \text{ g}$ ). Anatomical dissection revealed more developed reproductive organs in the fish from market M16. The stomach contents mainly consisted of small crustaceans and fish, crucial for the reproductive health of *R. kanagurta*. The histological examination of the testes showed various stages of sperm development, indicating healthy reproductive systems.

**Conclusion:** The study found that environmental conditions and the availability of food significantly influence the reproductive health of *R. kanagurta*. Fish from market M16 showed better growth and reproductive capabilities. This highlights the need to protect the marine environment to ensure the sustainability of this species. Future research should explore how seasonal changes affect reproductive health and how different diet components impact sperm development.

**Keywords:** Indian mackerel, reproductive health, physical characteristics, testes structure, diet analysis

\*Correspondence: hilwani@uitm.edu.my

<sup>a</sup> School of Biology, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia

<sup>b</sup> Human Genetics and Biochemistry Research Group (HuGeB), School of Biology, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia

<sup>c</sup> Department of Physiology, Faculty of Medicine, Universiti Kebangsaan Malaysia (UKM) Medical Centre, Kuala Lumpur, Malaysia

<sup>d</sup> Pengajian Sains Geomatik dan Sumber Alam, Kolej Pengajian Alam Bina (KAB), Kompleks Tahir Majid, Universiti Teknologi MARA, Shah Alam, Malaysia