

**Title :** Effect of protein hydrolysate from *Arthrospira platensis* on male reproductive system of cyclophosphamide-induced stress in rats

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## ABSTRACT

Cyclophosphamide (CP) is an alkylating agent commonly used in the treatment of various types of cancer. However, despite its effectiveness in treating cancer, it also induces toxicity on non-target cells by generating oxidative stress, particularly in reproductive tissues, leading to fertility. Recently, the consumption of algae-based protein has gained popularity due to its rich of amino acid content and pharmacological properties. Thus, the objective of this study was to determine the protective effects of protein hydrolysate (PS) derived from *Arthrospira platensis* on the male reproductive system of CS-induced stress in rats. Thirty-six male Wistar rats were randomly divided into four groups. Groups 1 and 2 served as the normal control and negative control groups and received distilled water orally, whereas groups 3 and 4 were treatment groups that received PS orally at doses of 3 and 6 mg/kg, respectively. Oral treatments were administered for 14 consecutive days. On day 7 and 14 of the experiment, rats in groups 2-4 were intraperitoneally injected with CP at a dose of 200 mg/kg. After the treatment period, reproductive organ weights, sperm quality, and reproductive organ histopathology were evaluated. The results showed that CP has negatively effects on the structure and function of male reproductive organs of rats. Significant increases ( $p < 0.05$ ) in testicular and epididymal weights, slight increases in prostatic and seminal weights, decreases in sperm concentration, motility, and viability, along with a significant increase in sperm morphological abnormalities and histopathological alterations in the reproductive organs, were observed in the negative control group compared to the normal control group. The treatment of PS at both doses could restored these damages. In conclusion, protein hydrolysate from *A. platensis* at doses of 3 and 6 mg/kg could protect against damage to male reproductive organs caused by CP-induced stress in rats.

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