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Protective Effects of Hibiscus Sabdariffa (Roselle) Against Hydrogen Peroxide-Induced Oxidative Stress in Zebrafish Kidney

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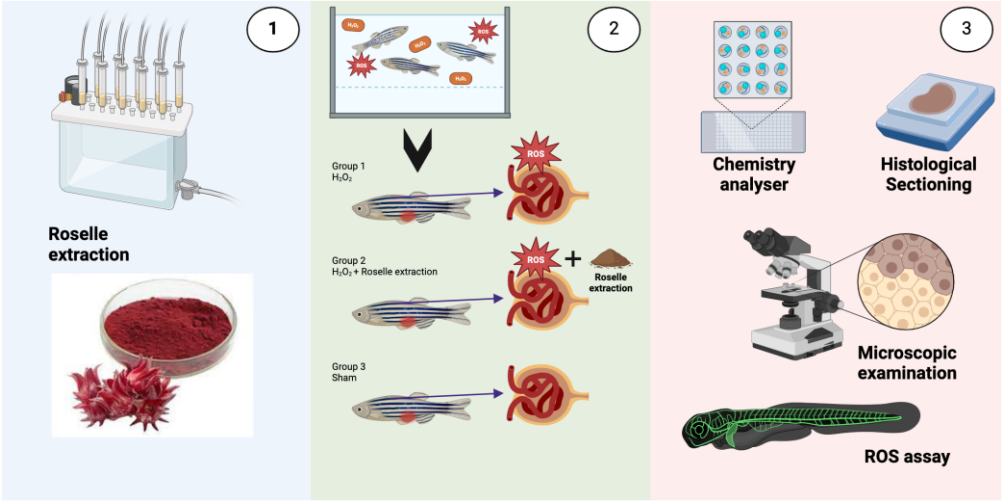
Objectives : Oxidative stress plays a pivotal role in the pathogenesis of kidney damage. The zebrafish has emerged as a versatile model for studying renal pathology. This study investigates the potential protective effects of Hibiscus sabdariffa (Roselle) against hydrogen peroxide (H_2O_2)-induced oxidative stress in zebrafish kidneys.
Methods : Adult zebrafish were exposed to H_2O_2 to induce oxidative stress, mimicking kidney damage. Subsequently, they were treated with varying concentrations of Roselle extract. Kidney function was assessed through histological analysis and kidney-specific markers. Oxidative stress parameters, including the levels of reactive oxygen species (ROS) and antioxidant enzymes, were measured. Control groups received either H_2O_2 or Roselle Hibiscus extract alone.
Results : H_2O_2 exposure significantly increased ROS levels and caused marked kidney damage, evident from histological changes and altered kidney function markers. In contrast, treatment with Roselle extract resulted in a significant reduction in ROS levels and improvement in kidney morphology and function. The highest concentration of Roselle extract was the most effective in mitigating oxidative stress and preserving kidney structure and function.
Conclusions : Our findings demonstrate that Roselle exhibits potent antioxidative properties, effectively protecting zebrafish kidneys from H_2O_2-induced oxidative damage. This suggests that Roselle could be a promising candidate for developing natural therapies against oxidative stress-related kidney diseases. Future studies are warranted to isolate the active components and understand the underlying molecular mechanisms of this protective effect.

Fig. 1 Summary of Experiment on Rossele as Antioxidant.png



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