

Effects of ethanolic extract of *Crinum macowanii* on the development of zebrafish (*Danio Rerio*) embryos

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Depression affects over 322 million people worldwide, causing both emotional and physical impairments (Marques *et al.*, 2025). Fluoxetine, a selective serotonin reuptake inhibitor (SSRI), is a commonly used antidepressant, but its side effects sometimes lead to treatment discontinuation (Edinoff *et al.*, 2021). This has increased interest in herbal medicines, including *Crinum macowanii* (CMa), a plant from the Amaryllidaceae family native to South Africa, known for its large spherical bulbs and traditional use in treating depression, anxiety, and stress (Nair and Van Staden, 2023). Its bulbs and roots are rich in alkaloids, particularly crinine and lycorine, which show potential in treating neurological disorders through acetylcholinesterase inhibition and may have affinity for the serotonin transporter (Muniandy, 2018; Elgorashi, 2019). However, scientific validation of their safety and efficacy is still lacking.

We aimed to investigate the effects of ethanolic extracts of CMa on the development of zebrafish embryos to determine the effective dose. Zebrafish embryos were exposed to different concentrations of the CMa ranging from 10-50 µg/ml. Developmental parameters such as survival rate, hatching success, morphological abnormalities, and growth progression were assessed over a period of 48-96 hours.

Findings showed that exposure to higher extract concentrations may cause changes in development, including delayed hatching and morphological defects, while lower concentrations appear to have minimal or no observable toxic effects. These findings highlight a dose-dependent response, emphasizing the importance of determining safe therapeutic ranges.

In conclusion, this study provides initial insight into the developmental effects of *Crinum macowanii*. While this plant shows potential as alternative therapeutic agents, their safety profiles must be carefully evaluated. To clarify their pharmacological actions and determine acceptable dosage levels for possible clinical usage, more research is advised. This study adds to the increasing amount of data demonstrating the safe incorporation of traditional herbal treatment into contemporary medical procedures.