

EVALUATING THE COMBINED ANXIETY ALLEVIATING PROPERTIES OF HYDROXYZINE AND ASCORBIC ACID USING A ZEBRAFISH *DANIO RERIO* MODEL

Surendra Vada^{a*}, Keerthana K.^a, Harshitha G.^a, Aswathy P.^a, Chanda Vikram^a, Ziya Khan^a, Pranthik Choudhury^a, Rithik Garai^a and Siddhant Sharma^a

(Received 04 August 2025) (Accepted 28 April 2026)

ABSTRACT

Anxiety disorders affect over 33% of the global population representing a major public health concern. Hydroxyzine, an antihistamine, and ascorbic acid (Vitamin C), a powerful antioxidant, are known to have anxiety-reducing effects. This study explores their combined impact using zebrafish (*Danio rerio*) as a behavioural model to evaluate the acute toxicity of hydroxyzine, assess the anxiolytic effects of hydroxyzine and ascorbic acid through behavioural tests-the Novel Tank Diving Test (NTT) and Light-Dark Test (LDT), and measure changes in cortisol, a key stress hormone. LC50 of hydroxyzine is 0.03g 100mL⁻¹. The combination of ascorbic acid and hydroxyzine (NTT and LDT) alleviate anxiety compared to the control group. Cortisol levels were lower in the combination group. The combination of hydroxyzine and Vitamin C was more effective than hydroxyzine alone. Zebrafish proved to be a reliable model for screening anxiolytics, and Vitamin C showed potential as an effective adjuvant therapy.