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Anxiolytic activity of a *Boophone disticha*: Behavioral analysis in mice subjected to early maternal separation followed by later stressors

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Background: *Boophone disticha* is one of the commonly used bulbous plants in the treatment of anxiety disorders by indigenous people of Zimbabwe and surrounding countries but there is currently lack of scientific evidence for such claims. Therefore, the current study aimed to evaluate the anxiolytic efficacy of *B. disticha* aqueous ethanolic extract in adult *Onicis France I* (OFI) mice subjected to early life stress followed by later stressors.

Methods: OFI mice were assigned to two groups at birth. Group A mice (control) were left undisturbed during stress procedures while Group B litter (MS+FS) was subjected to three hours daily maternal separation (MS) from PND2 to PND14, followed subsequently with twenty minutes of forced swim stress (FS) during adolescence (on PND35) and adulthood (on ND60 and PND90). On PND91, thirty MS+FS mice from Group B were randomly assigned to five groups (B1-B5; n=6 each) for further treatments. Group A (n=6) and Group B1 mice were given six daily oral doses from PND92-97 of normal saline (vehicle); Group B2 received diazepam, 1mg/kg body weight (BW); whilst Group B3, B4 and B5 were given low, medium and high dose of *B. disticha* extract at dosages of 10, 25 and 40 mg/kg BW respectively. On PND98, the open field and elevated plus maze tests were used to obtain psychopharmacological properties of *B. disticha*.

Results: Mice subjected to repeated early MS and subsequent FS during adulthood showed robust phenotypic abnormalities as compared to control undisturbed littermates, suggestive of increased anxiety-like behavior and inhibited exploratory locomotion. The benzodiazepine receptor agonist diazepam (1 mg/kg) produced a significant anxiolytic-like effect in the open field and elevated plus maze in stressed anxious mice. Current results found that stressed Mice treated with *B. disticha* aqueous extract also expressed lower scores of anxiety-like behaviors and higher exploratory and locomotor activities than the vehicle treated group.

Conclusions: The present findings demonstrate that abnormal anxiety-like and exploratory behavioral phenotypes in stressed mice are sensitive to diazepam and suggest that *B. disticha* is also effective in ameliorating these abnormalities.

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