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## CHRONIC ADMINISTRATION OF ALPHA LIPOIC ACID SHOWS ANTIDEPRESSANT-LIKE EFFECT IN MICE SUBJECTED TO CHRONIC MILD STRESS

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### ABSTRACT

Alpha-lipoic acid (ALA) has been found to increase insulin sensitivity which may lead to increase in tryptophan; a precursor of serotonin. This research evaluated the effect of ALA in mice induced with chronic depression using chronic mild stress (CMS). Fifteen mice were used and grouped into three groups with five mice each. Group I was given normal saline 10 ml/kg, group II and III were given ALA 200 mg/kg and Flouxetine 20 mg/kg orally respectively. Three tail suspension tests (TST) were conducted (before the chronic mild stress, two weeks of chronic mild stress and after treatment with ALA and Flouxetine) followed by open field test (OFT) and novel object recognition test (NORT). This study showed that ALA had a significant ( $p < 0.05$ ) effect in immobility time (behavioural despair) when compared with the normal saline group in TST. However, the result of the OFT showed no statistically significant ( $p > 0.05$ ) difference between the control group and the group that received ALA 200 mg/kg in line crossing (locomotor activity). Similarly, ALA did not significantly affect percentage preference in NORT. In conclusion, this study revealed that ALA has an antidepressant-like ability in mice subjected to chronic mild stress.

**Keywords:** Depression, Alpha-lipoic acid, Insulin sensitivity, Locomotor activity, Cognition

### INTRODUCTION

Depression is a common illness that is a cause of disability worldwide, and affects more than three hundred million people of all ages (WHO 2017). Exposure to stressful life events precede depression and chronic stress resulting in up-regulation of the production of pro-inflammatory cytokines which has been proposed to be associated with the pathogenesis of depression (Liu et al. 2015). The mechanism associated with depression is not yet fully understood, and current treatments remain ineffective in large subset of patients (Menard et al. 2016). The number and severity of episodes determines whether depressive disorder is mild, moderate or severe. Some types of depression show repeated depressive

episodes with the patient experiencing loss of interest and enjoyment, diminished activity for at least two weeks, anxiety, sleep and appetite disturbances and feelings of guilt, while some other types consist of both manic and depressive episodes separated by a period of normal mood. In Africa, about twenty nine million, one hundred and ninety thousand people (9% of three hundred and twenty two million) suffer depression, with over seven million in Nigeria (3.9 % of three hundred and twenty two million) (WHO 2017). Alpha-lipoic acid (ALA) also known as 1,2-dithiolane-

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