WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 11, Issue 13, 2426-2437. Research Article ISSN 2277–7105

EVALUATION OF SCHIZANDRA FRUIT AND VITAMIN ECOMPARATIVELYON SOCIAL BEHAVIOUR AND DEPRESSION IN SWISS MICEEXPOSED TO STRESS

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Article Received on
21 July 2022,

Revised on 11 August 2022,
Accepted on 01 Sept. 2022

DOI: 10.20959/wjpr202213-31830

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ABSTRACT

This research focus wason the comparative evaluation of any health benefits that schisandra and vitamin Emay profferamidst depression in ducedby stressors. There gimenswere pre-served on rodents pups that were along the line induced with stress/stress or sinan experimental model designed for 22 days. At the count of 22nd day, all the different cluster so fexperi mentally designed rodents groups were allowed to under go Neuro behavior tests–Nesting behavior test (NBT) and forced swim test (FST) which strictly followed established protocols. There sults observed in the FST showed from all the aspects of investigated parameters an over whelming expression of elevation of latenciestoim mobility, along side reduction in duration of immobility for the rodentspre-served with schisandra and vitamin Erelative to control ($P<0.001$;$P<0.01$). In the same vein, NBT results revealed increased nesting score for the two regimen-pre served animals than control. These observations in dicate that there gimens have antidepressant and social behavioural enhancement potential swhich may not differinefficacy.

KEYWORDS: Schizandra, VitaminE, biologicalStress, chemicalstress, socialbehaviour, depression.

INTRODUCTION

The drive to improve on management or treatment of mental health challenges, though gradually gaining global awareness is still no doubt met with posers (Garza, 2016; Fielding, 1999). Also the enormityof the socio-economic, socio-political and physical burden that trail

these mental health or neurological challenges, essentiallyrealignsthe efforts in search for accessibly and affordably sustainable variants/ alternative stomanaging plethora of neuro degenerative disorders as work in progress (Osim*etal*, 2017).

The variants in approach to addressing these health posersarenotalieninentirety of the real sense, as they have been known (even alongside orthodox medications) inexistenceall through civilizations of mankind–herbal /natural or traditional remedies (Christian*etal*, 2013; *Salmerón-Manzanoetal*, 2020).

Myriads of plants within the reach of man have not yet been explored scientifically for the rapeutic values and not reported for adverse side effects as well; hence, a lot of promise for health benefits is still brooded (Taofeeq *et al*, 2010). Whether herbal remedies will evolve that might effectively and in many ramifications resolve some of the numerous challenges associated with mental and neurological disorders is still amajor course of thoughts, planning and research aligning (Sule *et al*, 2017 a; Sule*etal*, 2017 b).

Among the several natural /medicinal plants that have been reference dfor beneficial therapy utilization is Schiz and rachinensis,which has been widelyinuse amongst Chinese population for several health purposes (Nowak*etal*, 2019). The fruits have been reported to improve vigor, slow down aging process and treat body fatigue (Panossian & Wikman, 2008; Szopas*etal*, 2017). Beside sitsac claimed effects on central nervous system related functions, schisandra has been identified and promote dasapotentadap to genwhichal so shows benefits for treating anxiety and stress (Nowak*etal*, 2019; Zhang*etal*, 2018). Meanwhile, mental health and neurological challenges, particularly depression which ranks amongst leading cause of disasters, and has led to suicides/ suicidaltendencies in many climes is strongly linked to stress (Drevets *et al*, 2008; Osanloo *et al*, 2016; Beck & Alford, 2009).

Thus, this research attempts to investigate side by side the rapeutic in fluence of schis and rachinensis and vitamin E on depressive behaviours; using stressed animals model.

METHODOLOGY

Inthisstudy, 72 pupsaged 2 days were putrandomly in fourclusters that have three sub-clusters of six pup seach, following 14 days acclimatization in standard experimental conditions of laboratory and then administeredas follows within twenty-two days duration.

First cluster designed to assessimpact of stress; had sub clusters 1 (non-stress), 2 (biologically stress), 3 (chemically stress) rodents.

Second cluster (mice not exposed to stressor) with sub clusters 1 (control), 2(Vitamin E treated) 3(schis and rat reated) to assess rodents response to treatments.

Third cluster (mice exposed to biological stress) with sub clusters 1 (control), 2 (Vitamin E treated) 3 (schis and rat reated) to assess rodents response to treatments.

Fourth cluster (rodents exposed to chemical stressor) having sub clusters 1 (control), 2 (Vitamin E treated), 3(schis and rat reated) for assessing rodents response to the treatments.

Biological and chemical stresses were induced by approved methods as narrated by Monteiro as well as Binat (Monteiro *et al*, 2015; Binat *et al*, 2005). All control groups in the clusters/ sub cluster were allowed food and clean water (unless stated otherwise, such as the control in third cluster that will also have been exposed to biological stress). Dosages for all vitamin E treatment were 0.5 mg/kg orally once a day, Schisandra 2mg /kg same frequency in all clusters. Animals then had Neuro behavior examination on day 22.

NBT: Then estbuilding protocol as described by Gaskill *et al*, (2013) in which mice are provided with nest les materials, and expected to build nests, asasign of health and welfare was used. They were left over night and checked within a consistent time on the next day to score their nest building and awarded nesting score (1 to 5) base on performance elated to how well they utilized the materials to make nest for their comfort (Gaskill *et al*, 2013).

FST: This was performed in accordance with standardized protocol,where the animals are immersedin to transparent Plexiglas designed cylindrical water/ swimming pools and observed for immobility latencies and duration (Can*etal*, 2012).

Statistical Analysis

With the aid of SPSS version 17.0 analysis of collated data by statistical tools was achieved. One way ANOVA and post-hoc LSD test analyzed variance within & among samples, and difference between two groups respectively. Results in mean ± standard error of mean are presented in bar charts.

RESULTS

Comparison of latency to immobility in the forced swim test for non-stressed, biologically stressed and chemically stressed mice (fig.1) reveals reduced latency in stressed animals at p <0.001 vs control and at p<0.05 for chemically vs biologically stressed groups; depicting graded depressive impact of stress models.

Comparison of latency to immobility in the forced swim test for non-stressed mice treated with vitamin E and schisandra (fig.2) revealed elevated latency in schisandra treated groups atp <0.001 vs control; depictinganti-depressive potential/ activity.

Comparison of latency to immobility in the forced swim test for biologically stressed mice treated with vitamin E and schisandra (fig.3) revealed elevated latencies in both treatment regimen animals than control at p <0.001 and p<0.01; depictingeither prevention or reversal of depressivesigns.

Comparison of latency to immobility in the forced swim test for chemically stressed mice treated with vitamin E and schisandra (fig.4) reveals similar elevated latencies in both groups of treated mice at p < 0.001 and p < 0.01 relative to control.

Comparison of duration of immobility in the forced swim test for non-stressed, biologically stressed and chemically stressed mice (fig.5): This was not significantly different across all groups of experimental animals at p<0.01.

Comparison of duration of immobility in the forced swim test for non-stressed mice treated with vitamin E and schisandra (fig.6) reveals reduction in duration for groups of treatment regimen animals than control (p < 0.01); appearing to corroborate observation in figure 2.

Comparison of duration of immobility in the forced swim test for biologically stressed mice treated with vitamin E and ginseng (fig.7) reveals reduced duration for the vitamin E administered mice at p < 0.01 vs control; appearing to partly corroborateevent in figure 3.

Comparison of duration of immobility in the forced swim test for chemically stressed mice treated with vitamin E and ginseng (fig.8) revealed reduced duration for the two regimen groups than control and decrease for vitamin E than schisandra group (p < 0.01); corroborating the observation in figure 4 and also suggesting vitamin E regimen may be

graded over schisandra in this particular/ specific impact but not conclusively as latency to immobility did not corroborate this with statistical significance.

Comparison of nesting score for non-stressed mice treated with vitamin E and schisandra (fig.9) shows no significant difference across all experimental animal groups at $p < 0.01$ vs control.

Comparison of nesting score for biologically stressed mice treated with vitamin E and schisandra (fig.10) showed significant elevation in nesting score of the regimen administered animals than control at $p < 0.001$.

Comparison of nesting score for chemically stressed mice treated with vitamin E and schisandra (fig.11) similarly showed elevation in nesting score of the schisandra and vitamin E regimens mice than control significant at $p < 0.001$.

DISCUSSION AND CONCLUSION

The search for viable, affordable and accessible alternative medications with less delete rious side effects partly drives this study of comparatively evaluating the health benefit sofa known drug (vitamin E) and reference herbal regimen (schisandra chinensis) in two models of stressed mice.

The biologically and chemically stressed mice were confirmed to showsigns of depression, from observations of the forced swim test (figure1) in the first instance. Meanwhile, the FST also showed (figure 2) that non stressed mice pre-administered with the two regimensseemed to fare better (not expressing signs of depression) than their control counter part. It is probable that this is suggesting some anti–depressive potentials of those regimens.

Further more, from figures 3, 4, 5, 6, 7 and 8 this FST over whelmingly but tressesei the ranap parent preservation or protection of mice pre-administered with the known/ standard and reference regimens from depression orreversal of depressive signs in them, and will corroborate the review of (Szopas*etal*, 2017).

However, it is worthnoting that events observed from figure 8 of FST though reveal in gareduction of immobility duration for schisandra and vitamin E relative to control and in particular (decrease duration for vitamin E than schisandra); which experimentally should in fer that vitamin E regimen had greate reffect than schisandra may be empirically in

conclusive. Reason being that this duration of immobility did not corroborate with latency to immobility of same contingent FST interms of statistical significance, and all other observed corollary parameters do not seem to depict otherwise.

Moreso, the observations from the nesting behavior test (NBT) corroborate the fact that there ference and standard treatment regimens both showed potent antidepressant and social behavior alenhancement potentials.

Inconclusion, it can be in ferred that in this study, schisandra and vitamin E have both exhibited antidepressant and social behavioural enhancement potentials, which in comparativeterms of grade or extent of efficacy may require further in vestigation, recommending use of isolated active compound of schisandra.

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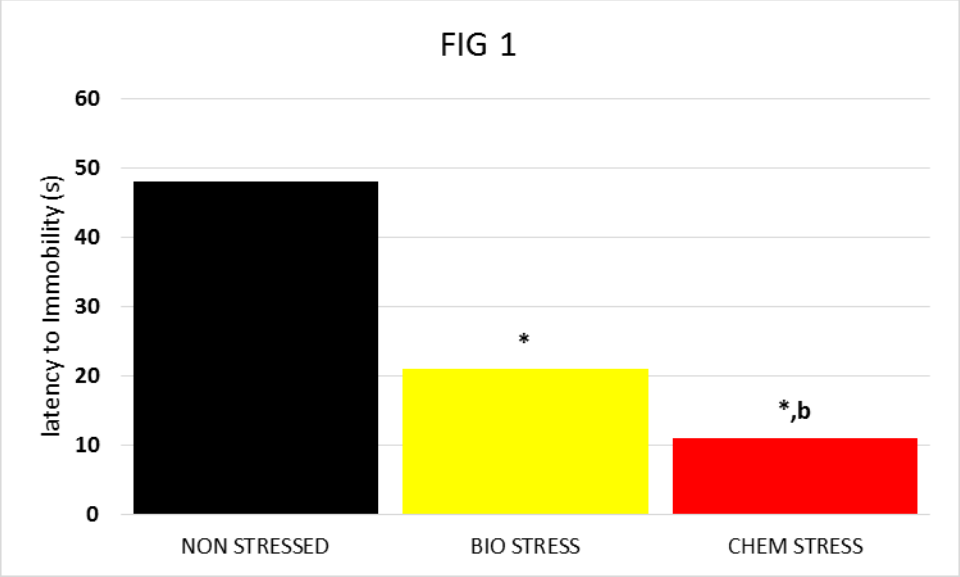
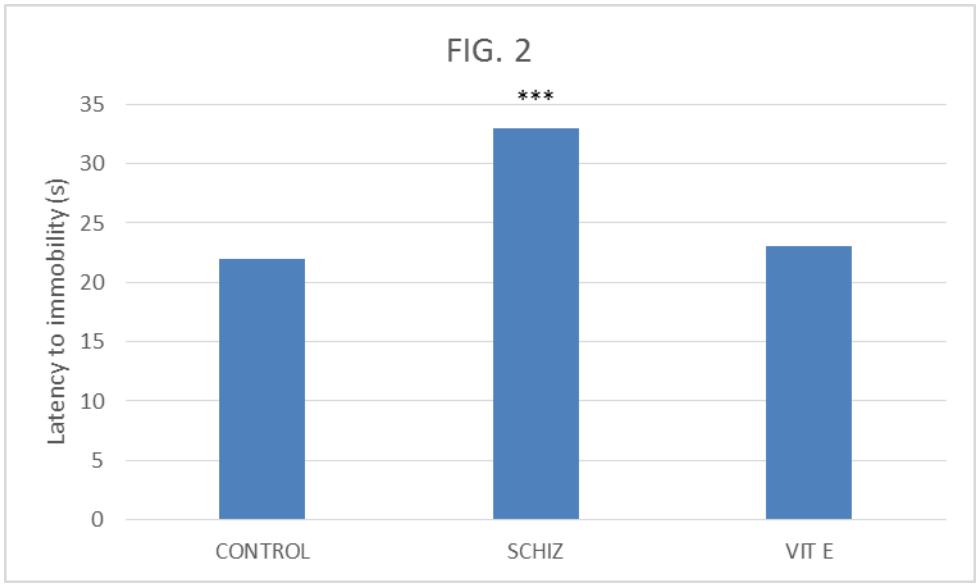
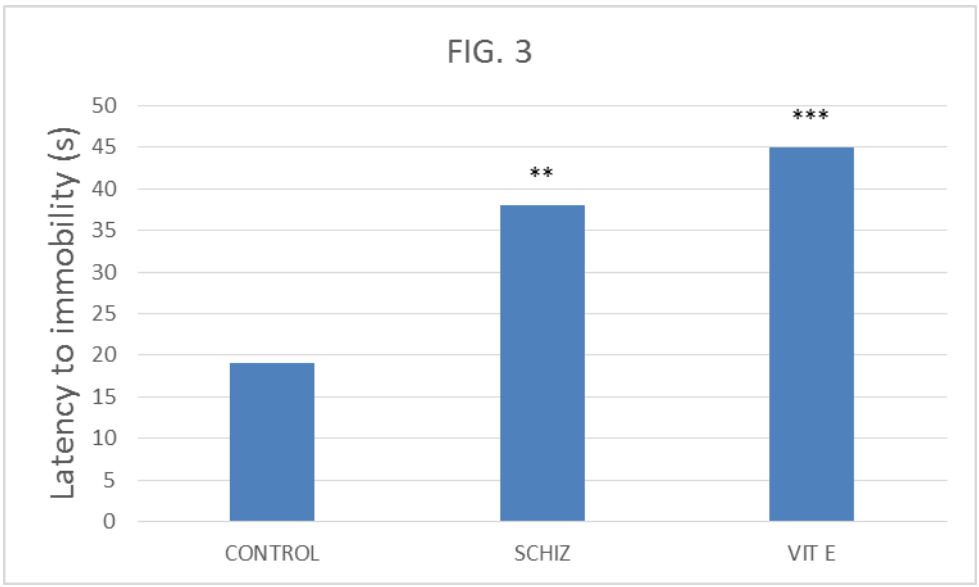


Comparison of latency to immobility in the tail suspension test for non-stressed, biologically stressed and chemically stressed mice.*= significant at p < 0.001 vs control; b= significant at 0.05 vs biologically stressed.



Comparison of latency to immobility in the forced swim test for non-stressed mice treated with vitamin E and schisandra.*= Significant at p < 0.001 vs control.**



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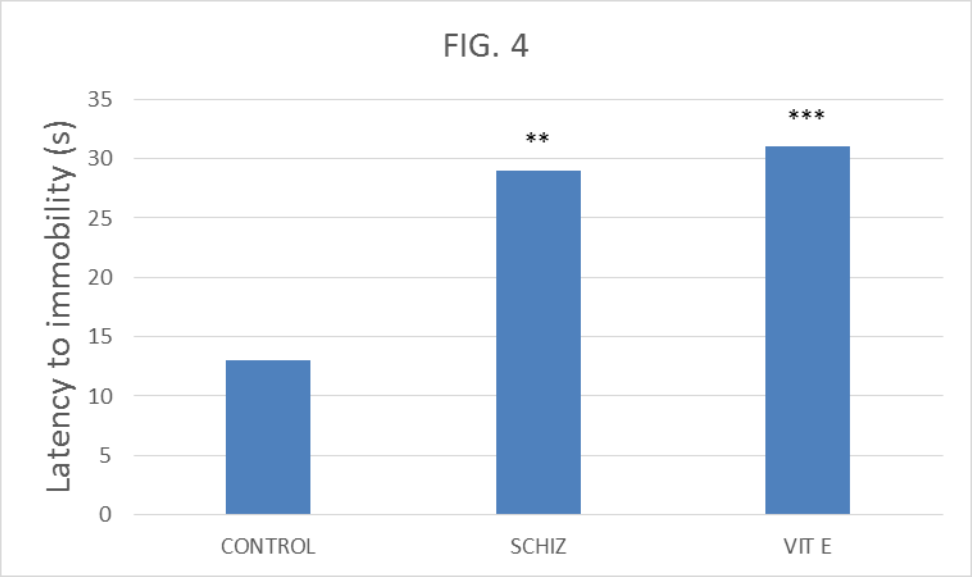

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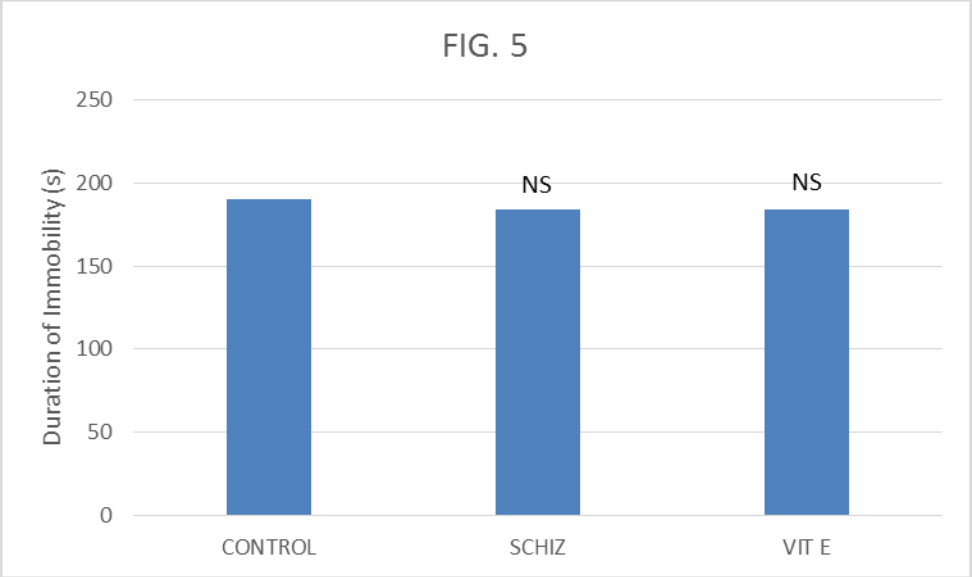
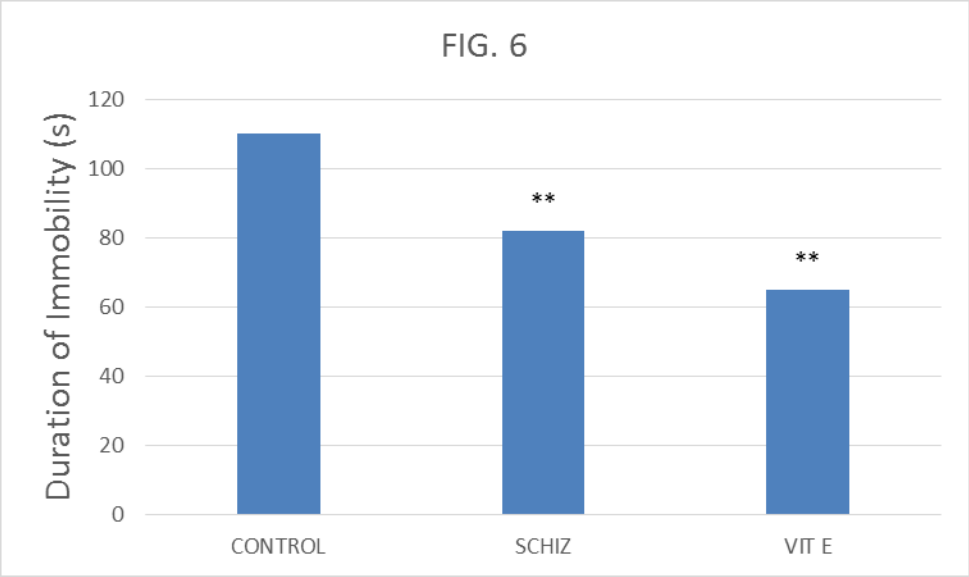


Comparison of duration of immobility in the forced swim test for non-stressed, biologically stressed and chemically stressed mice: NS= Not Significant at p < 0.01 vs control.



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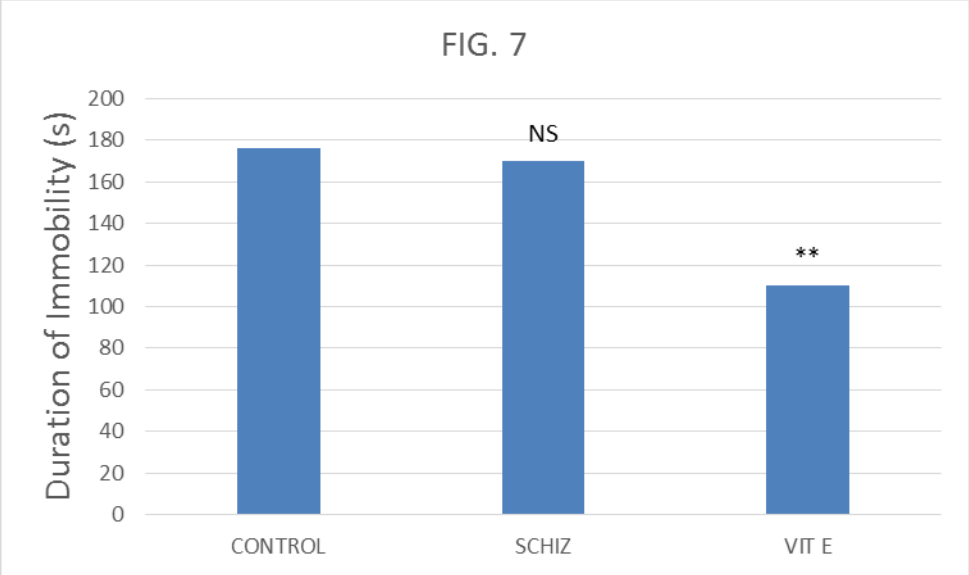
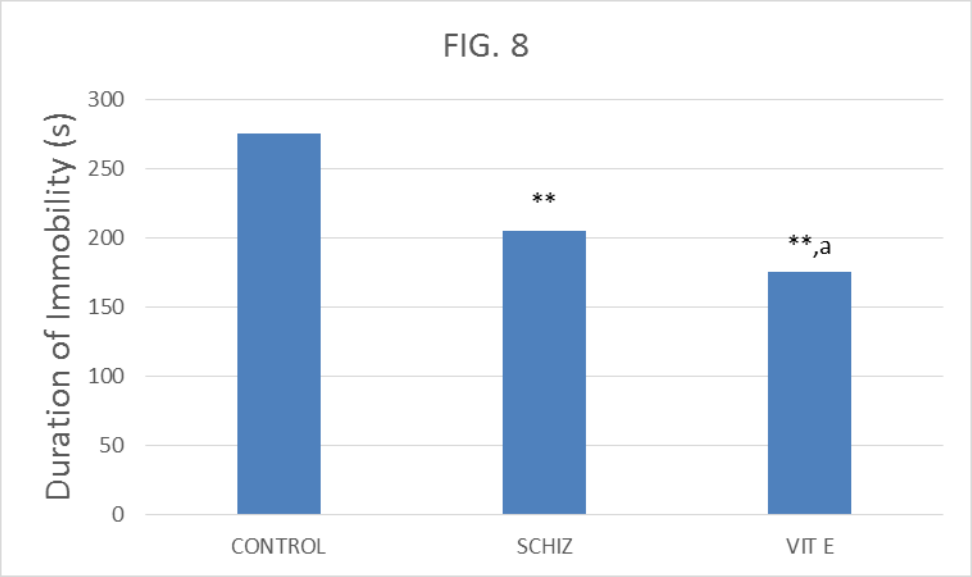
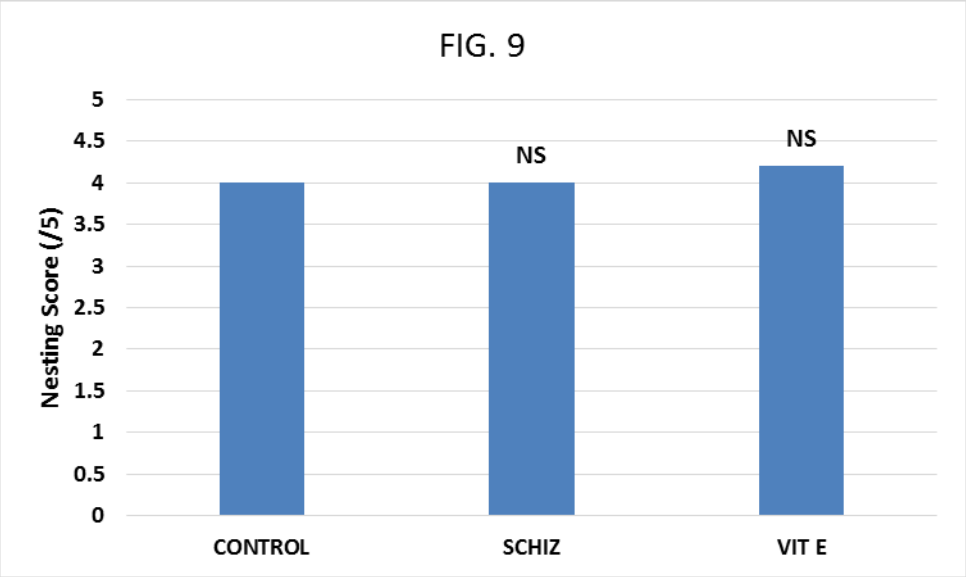


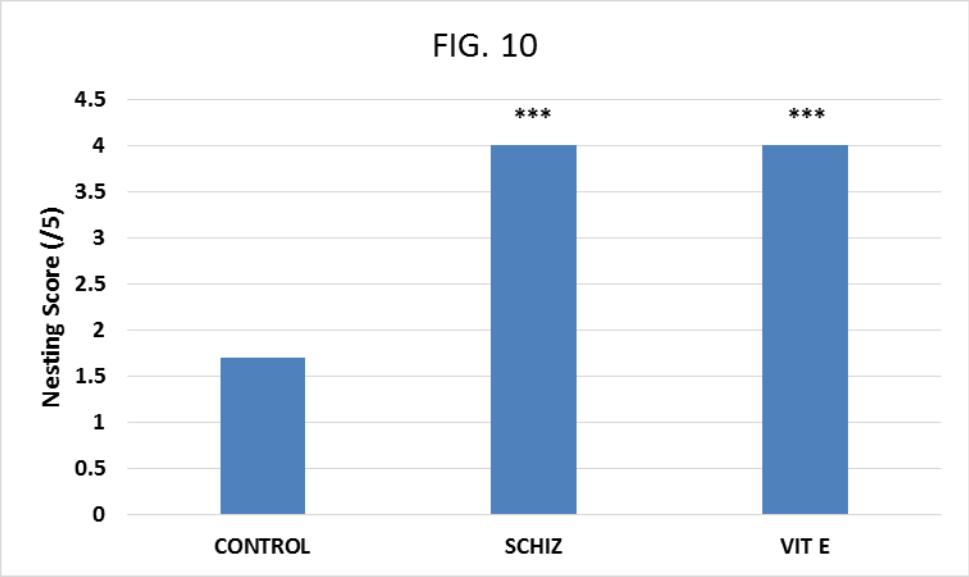
Comparison of duration of immobility in the forced swim test for biologically stressed mice treated with vitamin E and schisandra:= Significant at p < 0.01 vs control; NS= Not Significant at p <0.01 vs control.**



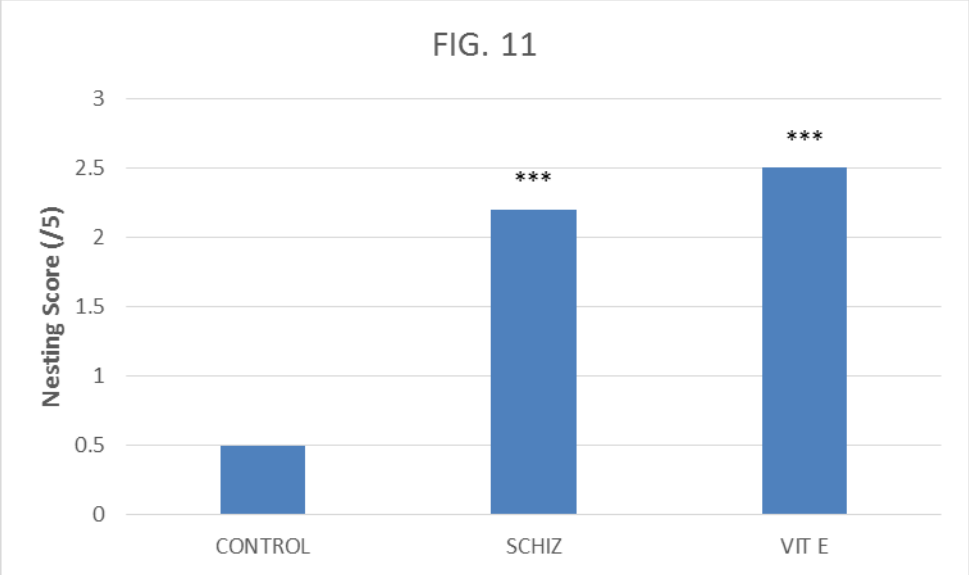
Comparison of duration of immobility in the forced swim test for chemically stressed mice treated with vitamin E and schisandra:= Significant at p < 0.01 vs control; a= Significant at p < 0.01 vs control.**



Comparison of nesting score for non-stressed mice treated with vitamin E and schisandra: NS= Not Significant at p < 0.01 vs control.



Comparison of nesting score for biologically stressed mice treated with vitamin E and schisandra:*= Significant at p < 0.001 vs control.**



Comparison of nesting score for chemically stressed mice treated with vitamin E and schisandra:*= Significant at p < 0.001 vs control.**

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