ANTIDEPRESSANT ACTIVITY OF HYDROALCOHOLIC EXTRACT OF ZINGIBER OFFICINALE

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INTRODUCTION
Depression is an important global public-health issue and is associated with substantial disability. It is a chronic illness that affects mood, thoughts, physical health and behavior of any individual and has been estimated to affect up to 21% of the world’s population. Synthetic antidepressants taken in appropriate doses are often associated with their anticipated side effects like dry mouth, inability in driving skills, constipation and sexual dysfunction and majority of patients are reluctant to take this treatment. Accordingly, natural medicinal plants may be important sources of novel antidepressant drugs and the usage of plant extracts may be proven better in the management of stress and depression. In oriental countries, many medicinal plants from natural resources, especially Chinese medicine, such as Plantago asiatica, Scrophularia ningpoensis, and Hypericum perforatum were successfully used to treat or prevent depression-like disorders.

Ginger, the rhizome of Zingiber officinale, is one of the most widely used species of the ginger family (Zingiberaceae) and is a common condiment for various foods and beverages. Ginger has a long history of medicinal use dating back 2,500 years in China and India for conditions such as headaches, nausea, rheumatism, and colds. Characterized in traditional Chinese medicine as spicy and hot, ginger is claimed to warm the body and treat cold extremities, improve a weak and tardy pulse, address a pale complexion, and strengthen the body after blood loss. Ginger contains a number of pungent constituents and active ingredients. Steam distillation of powdered ginger produces ginger oil, which contains a high proportion of sesquiterpene hydrocarbons, predominantly zingiberene. The major pungent compounds in ginger, from studies of the lipophilic rhizome extracts, have yielded potentially active gingerol, which can be converted to shogaols, zingerone, and paradaj. The compound 6-gingerol appears to be responsible for its characteristic taste. Zingerone and shogaols are found in small amounts in fresh ginger and in larger amounts in dried or extracted products.

The mechanism underlying ginger’s anti-emetic activity is not clearly understood, but the aromatic, spasmylovic, carminative, and absorbent properties of ginger suggest it has direct effects on the gastrointestinal tract. No study indicates ginger influenced within the vestibular or oculomotor system. A mechanism involving the central nervous system cannot be ruled out, considering several of ginger’s components antagonize serotonin type-3 receptors; however, this has not been clearly demonstrated. The compounds 6-gingerol and 6-shogaol have been shown to have a number of pharmacological activities, including antipyretic, analgesic, antitussive, and hypotensive effects. Ginger extracts exhibit inhibition of platelet aggregation and thromboxane synthesis in vitro and has led to concerns about their potential anticoagulant effects. Daily consumption of 15 gm raw ginger rhizome or 40 gm cooked rhizome by healthy volunteers for two weeks failed to decrease platelet cyclooxygenase activity. Similarly, differences were not found in bleeding time, platelet count, and platelet functioning when eight healthy volunteers were given a single 2-gram dose of the dried rhizome or placebo. In continuation of our research on Zingiber officinale, we have investigated the probable mechanisms of antidepressant-like activity of Zingiber officinale in behavioral models of depression using laboratory rats. The study would possibly help to establish that hydro alcoholic extract of the Zingiber officinale rhizomes which have potential therapeutic value for the management of depressive disorders.

MATERIALS AND METHODS
Collection and Preparation of extract
Zingiber officinale was collected from Bilaspur, India. The rhizomes were washed; air dried under shade and powdered with the help of Grinder at School of Pharmacy, Chouksey Engineering College, Bilaspur, India. Powdered rhizomes were weighed and packed in soxhlet. Solvent used for soxhlet was mixture of methanol and water in the ratio of
Forced Swim Test (FST)

For the assessment of antidepressant activity, dose level was chosen in such a way that, dose was approximately one tenth of the maximum dose during acute toxicity studies (150-300mg/kg/day). Imipramine was used as the reference drug for evaluating the antidepressant activity. Imipramine was powdered and made into suspension in distilled water using powdered and made into suspension in distilled water using.

Groping of Animal

Animals were divided in to three groups, each group consisting of 6 rats.

Group I: Received no treatment and served as control, 1% gum acacia (10ml/kg)
Table 1. Effect of Zingiber officinale on duration of immobility time in the tail suspension test (TST) and Forced Swim Test (FST) using rats.

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose mg/kg/ (10ml/kg)</th>
<th>(S), TST Duration of Immobility</th>
<th>(S), FST Duration of Immobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1% gum acacia</td>
<td>193±3.51</td>
<td>178±1.52</td>
<td></td>
</tr>
<tr>
<td>Zingiber officinale</td>
<td>150</td>
<td>141±5.06</td>
<td>146±1.73</td>
</tr>
<tr>
<td>Zingiber officinale</td>
<td>300</td>
<td>135±9.29</td>
<td>122±4.35</td>
</tr>
<tr>
<td>Imipramine</td>
<td>10</td>
<td>132±4.93</td>
<td>119±1.15</td>
</tr>
</tbody>
</table>

Values represented mean ± S.E.M. (n=6), P<0.05, P<0.01 vs. control (group 1).

CONCLUSION
As medicinal plants have their importance since ancient time, people using it from various ways as a source of medicine. From the above valuable animal study, we conclude that the plant extract Zingiber officinale show a significant antidepressant activity in TST and FST models of depression. Thus, we can say that Zingiber officinale significantly reduces the immobility period in both TST and FST.

REFERENCES

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