

## Anti-Depressant Potential of Banana Fruit

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### ABSTRACT

The search for novel pharmacotherapy from medicinal plants for psychiatric illnesses has significantly progressed in recent years. The present study was undertaken to test the antidepressant potential of *Musa paradisiaca* (commonly known as banana) fruit paste. Swiss mice were administered the banana fruit paste at various concentrations ranging from 5%, 10% and 20% w/w once daily for 15 successive days. The antidepressant activity was measured using forced swim test (FST) and tail suspension test (TST). The results showed that the fruit paste significantly reduced the immobility time of mice in both FST and TST. Baclofen (10 mg/kg, i.p.), prazosin (62.5 mg/kg, i.p.) and p-CPA (100 mg/kg, i.p.) significantly antagonized this reduction in immobility time. Furthermore, *Musa paradisiaca* paste inhibited significantly the Monoamine oxidase (MAO) and malondialdehyde (MDA) levels. These findings reveal the anti-depressant potential of banana fruit. The underlying mechanism of action appears to be related to anti-oxidant, pro-adrenergic, pro-serotonergic and/or MAO inhibitory activity exhibited by the banana fruit.

The prevalence of depression is alarming all over the world afflicting as many as 121 million individuals. Females in India are more susceptible than males owing to societal customs. The efficacy of anti-depressant medicines is limited. Therefore, there is an urgent need for safe, better-tolerated and more efficacious anti-depressants. Furthermore, depression is largely a hidden problem in India, which prompts the necessity of identifying the nutrients commonly available to Indian population for the management of depression. Recently, the search for novel drugs of vegetable origin for psychiatric illnesses has progressed significantly (Zhang, 2004).

*Musa paradisiaca* Linn or banana, a plant belonging to family Musaceae, is consumed all over the world as a popular fruit throughout the year. Traditionally, the fruits of banana have been used as a remedy for constipation, hangovers, anthelmintic and as a rich source of iron (Davey *et al.*, 2009) and potassium (Rai *et al.*, 2009). Banana contains very high levels of antioxidants, viz. vitamin-A, vitamin-C, carotenoids (Davey *et al.*, 2009), thiamine, niacin, catechins and  $\alpha$ -tocopherol (Enayde *et al.*, 2006). Furthermore, banana contains hypoglycemic agents (Ghosal and Saini, 1984) such as sterylacetyl glycoside (sitoinosides I and II) and diacylglycerols in addition to several other bioactive compounds.

However, there is no scientific evidence for therapeutic potential of banana in neuropsychiatric disorders. In the light of above, the present study was designed to determine the anti-depressant potential of banana fruit in mice.

### Objectives :

The present study was undertaken to explore the anti-depressant potential of *Musa paradisiaca* paste (MPP) using forced swim test and tail suspension test. An attempt has also been made to determine the underlying mechanism of action of MPP by co-administration of agents modulating noradrenaline, serotonin, malondialdehyde and GABA activities.

## MATERIALS AND METHODS

### Plant material:

The fresh banana (*Musa paradisiaca*) fruit was purchased from local market of Hisar and got authenticated from Raw Materials Herbarium and Museum, National Institute of Science Communication and Information Resources, New Delhi. Different concentrations of *Musa paradisiaca* paste (5, 10, 20%, w/w) was fed to separate groups of mice along with their diet. This diet comprised of a mixture of *Musa paradisiaca* paste

### Key words :

*Musa paradisiaca*,  
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Tail suspension  
test

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