Evaluation of antidepressant activity of aqueous extract of the *Prosopis cineraria* in albino mice

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Introduction

- What is depression
- Signs and symptoms of depression
- Prevalence of depression
- Management of depression
Depression

Most prevalent mental disorder

Characterized by

✓ depressed mood
✓ loss of interest or pleasure
✓ decreased energy
✓ feelings of guilt or low self-worth
✓ disturbed sleep or appetite
✓ poor concentration
Symptoms

- Changes in Appetite or Weight
- Difficulty thinking
- Feelings of Worthlessness, Guilt
- Difficulty concentrating
- Changes in Psychomotor Activity
- Difficulty making decisions
- Changes in Sleep Patterns
- Decreased Energy
- Death or Suicidal thoughts
Prevalence

- World Health Organization report:
  - ~450 million people suffer from a mental or behavioral disorder
  - ~12.3% of the global burden of disease
  - Will increase to 15% by 2020

- Psychiatric illness is also often associated with suicide
  - 10 and 20 million suicide attempts every year
How to manage depression
- Stress management
- Behavioral therapy
- Pharmacological treatment
Reversible inhibitors of MAO-A (RIMAs)

- Moclobemide, Clorgyline

Tricyclic antidepressants (TCAs)

- NA + 5-HT reuptake inhibitors
  - Imipramine, Amitriptyline, Trimipramine, Doxepin, Dothiepin

- Predominantly NA reuptake inhibitors
  - Desipramine, Nortriptyline, Amoxapine, Reboxetine
Selective serotonin reuptake inhibitors (SSRIs)
Fluoxetine, Fluvoxamine, Paroxetine, Sertraline, Citalopram, Acitalopram

Serotonin and noradrenaline reuptake inhibitors (SNRIs)
Venlafaxine, Duloxetine

Atypical antidepressants
Trazodone, Mianserin, Mirtazapine, Bupropion, Tianeptine, Amineptine
Need for alternative medicine

- Inspite of availability of antidepressant drugs, still depression continue to be a major medical problem

- Need for a drug with less side effects and better tolerance

- Herbal alternatives with known pharmacological activities offer benefits- cheap, natural, fewer side effects

- Leaves of *Prosopis cineraria* are selected for evaluating its antidepressant activity
Aims and Objectives

To evaluate the antidepressant activity of aqueous extract of the *Prosopis cineraria* in albino mice
MATERIAL AND METHODS
Prosopis cineraria

> *Prosopis cineraria* is a species of flowering tree in the pea family, *Fabaceae*

> Native to arid portions of Western Asia and Indian subcontinent

> Common names:
  - Ghaf (Arabic), Khejri (Rajasthan)
  - Banni (Kannada), Vanni (Tamil), Jammi (Telugu)
Phytochemical investigations on the leaves

- hydrocarbons and phenolic acid derivatives
- unsaturated fatty acids
- linoleic acid and oleic acid

Numerous bioactive compounds have been isolated - flavonoids, alkaloids, diketones, phenolic contents, free amino acids, patulitrin, spicigerin, prosogerin A,B,C,D, lipids, b-sitosterol, sugars and vitamins
Uses

- Its flowers mixed with sugar when administered orally prevent miscarriage.
- With twig, the flowers are also used as anti-diabetic agent.
- Dry pods of the plant help in preventing protein calorie malnutrition and iron calcium deficiency in blood.
- Smoke of leaves is used to cure eye infections.
- Bark of the tree is used in the treatment of asthma, bronchitis, dysentery, leucoderma, leprosy, muscle tremors and piles.
- Pharmacological activities like analgesic, antipyretic, antihyperglycemic, antioxidant, antidepressant, antihypercholesterolemic, antitumor, nootropic have been reported from different plant extracts.
Preparation of extract

- Leaves of *P. cineraria* were collected from the plants available locally and taxonomically identified.

- Dried leaves were subjected to size reduction to a coarse powder which is then extracted in soxhlet apparatus with distilled water and concentrated to dryness using desiccator.
Animals used in the experiment

- 24 Swiss albino mice (6-8 weeks) of either sex weighing 25-30 g were used.
- They were housed in light controlled room (12:12h).
- Animals were fed with standard laboratory diet and water.
Forced swim test (FST)

24 albino mice were divided into four group consisting of six animals each

- Group I - control - distilled water
- Group II - standard - Imipramine at a dose of (15mg/kg.)
- Group III - AEPC 100 mg/ kg
- Group IV - AEPC 200 mg/ kg

Drugs were dissolved in distilled water and given orally 1 hour before study.
Mice were individually forced to swim in open glass chamber [40x18cm]

Each animal during initial 2 min-To get acquainted to the environment
Next 4 min- the duration of immobility was manually recorded
Statistical analysis

The end point variables are subjected to a suitable statistical analysis – ANOVA, if results are significant then subjected to Tukey’s posthoc analysis
## Results

### Forced swimming model

<table>
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<tr>
<th>GROUPS</th>
<th>DRUGS</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>F Value</th>
<th>P Value</th>
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<tbody>
<tr>
<td>Group-A</td>
<td>Control</td>
<td>70.42</td>
<td>45.19</td>
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<tr>
<td>Group-B</td>
<td>Standard</td>
<td>30.34</td>
<td>50.10</td>
<td>1.62</td>
<td>0.22</td>
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<td>Group-C</td>
<td>AEPC 100mg/kg</td>
<td>60.33</td>
<td>53.56</td>
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<td>Group-D</td>
<td>AEPC 200mg/kg</td>
<td>20.44</td>
<td>30.91</td>
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</tbody>
</table>
Forced swimming model (In sec)

Control: 70 sec
Standard: 30 sec
EPC 100mg/kg: 60 sec
AEPC 200mg/kg: 20 sec
Conclusion….

- Aqueous extract of Prosopis cineraria leaves possesses antidepressant activity.
- In comparison to standard drug Imipramine, test drug Prosopis cineraria at different doses showed significant activity.
- It holds the scope for a new generation of antidepressant drug.

Limitation of the study:

Need for further studies on other experimental animals and human beings to establish its usefulness, exact mode of action and toxicity data.


If you are depressed, you are living in the past.
If you are anxious, you are living in the future.
If you are at peace, you are living in the present.
THANK YOU