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
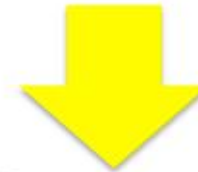
Symptoms

Prevalence
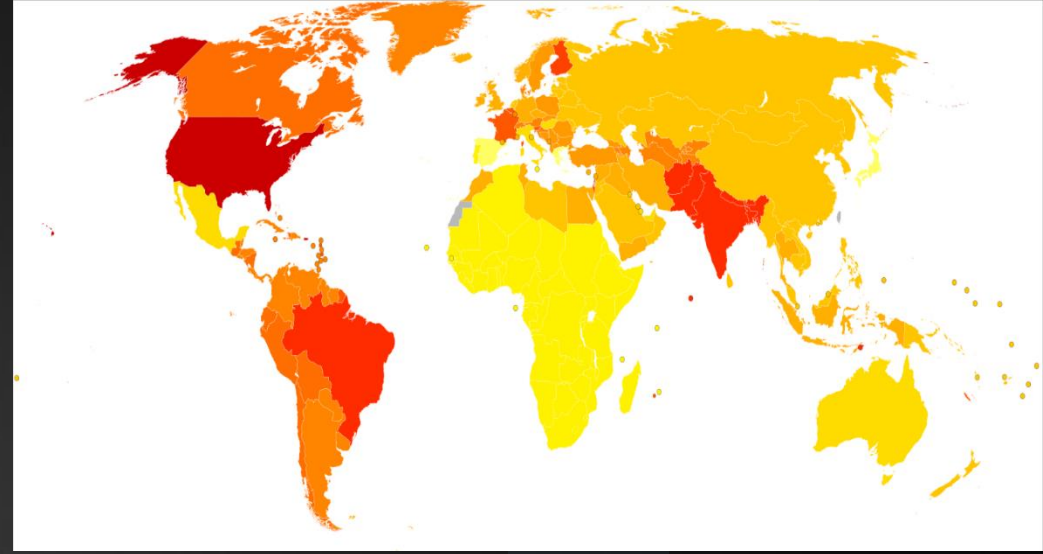
▶ World Health Organization report :

~450 million people suffer from a mental or behavioral disorder

~12.3% of the global burden of disease

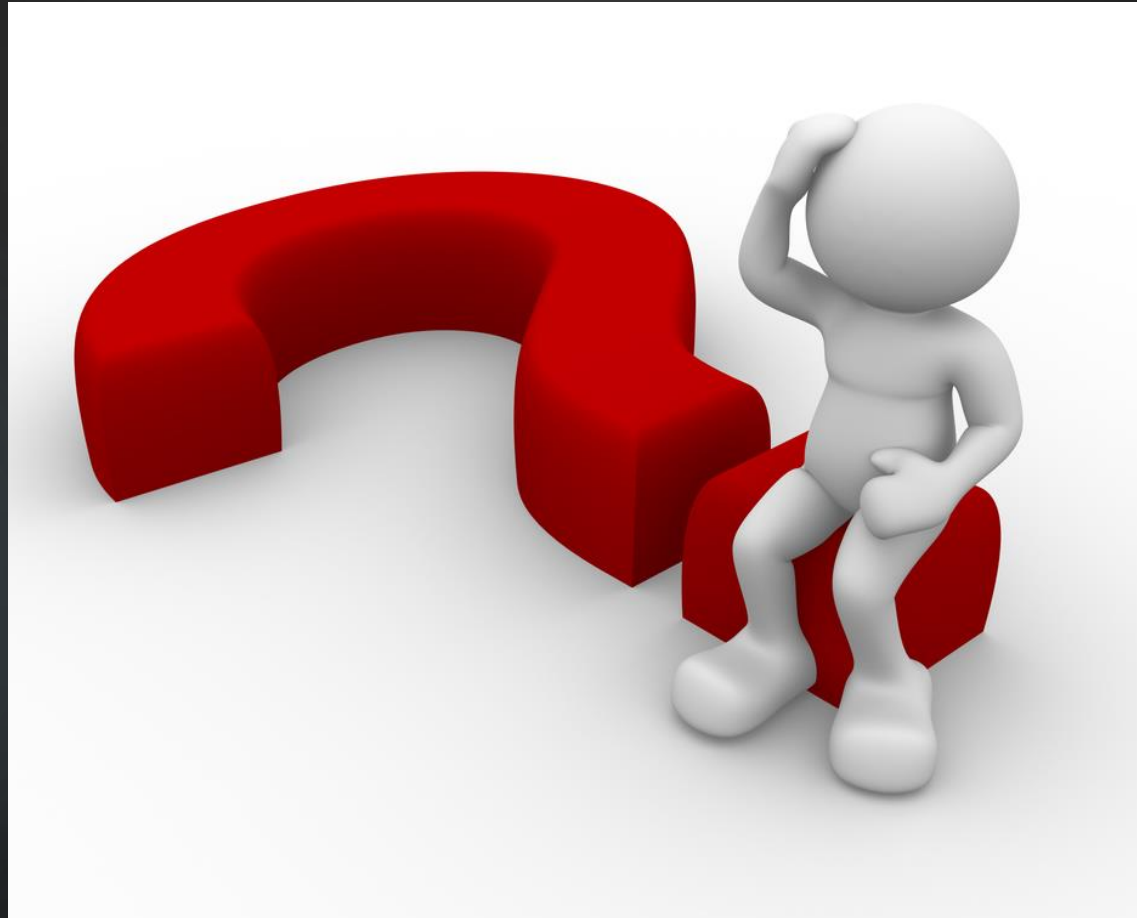Will increase to 15% by 2020

▶ 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 orally1 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			ANOVA	
GROUPS	DRUGS	Mean	Std. Deviation	F Value	P Value
Group-A	Control	70.42	45.19		
Group-B	Standard	30.34	50.10	1.62	0.22
Group-C	AEPC 100mg/kg]	60.33	53.56		
Group-D	AEPC 200mg/kg]	20.44	30.91		

Forced swimming model (In sec)
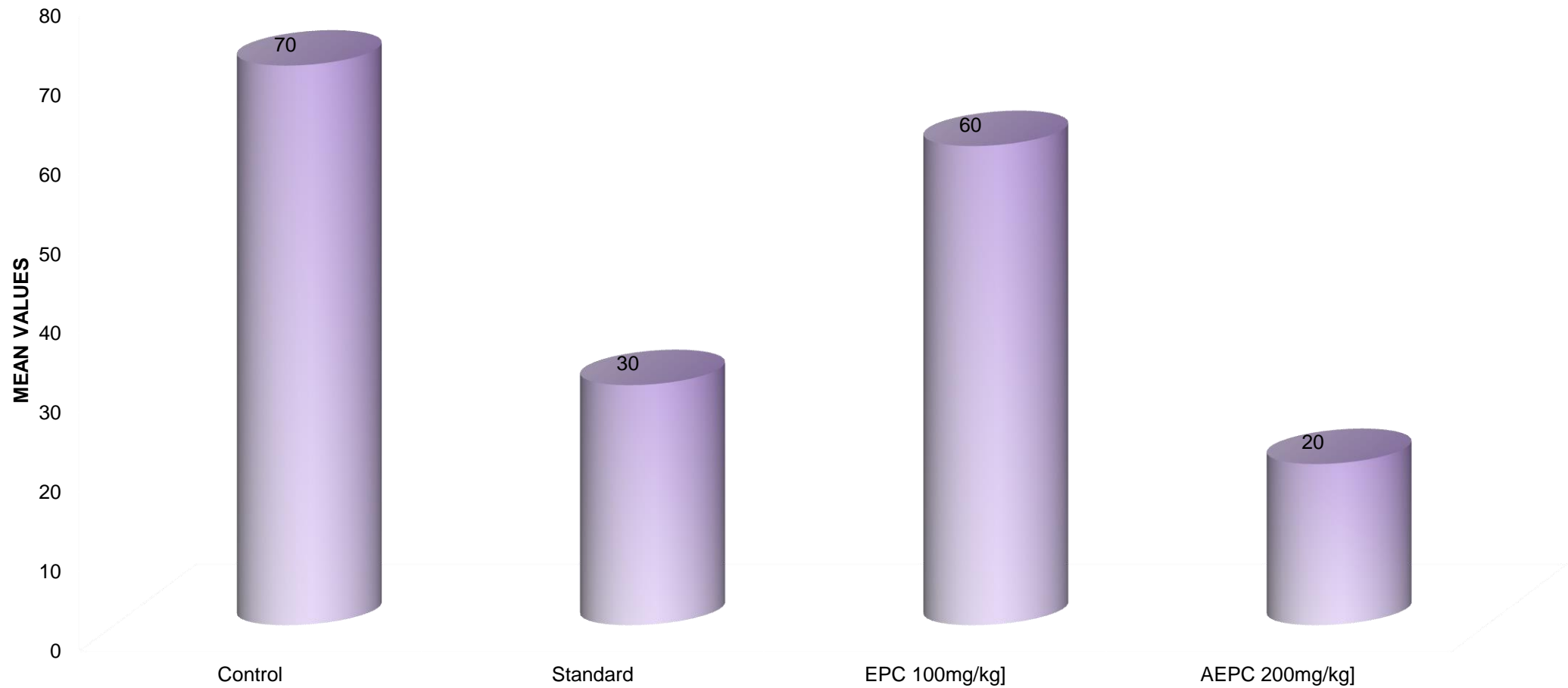
Conclusion….

▶ 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

References

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Lao Tzu

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