

## DRUG PROVING

### Agave americana

A multicentric double blind study carried out by CCRH

#### Abstract

Objective of the study was to elicit the pathogenetic effects of *Agave americana* on healthy human volunteers. The human pathogenetic trial was conducted at four Research Institutes/Units of Central Council for Research in Homoeopathy (CCRH). It was a randomized placebo controlled study, in which twenty eight volunteers participated, out of which twenty were kept on drug and eight were on placebo. The drug has produced certain skin and gastric symptoms similar to its known toxic effects, such as acute contact dermatitis, gastric irritation. Besides, symptoms pertaining to other parts of the body have also been brought out during the course of human pathogenetic trial.

#### INTRODUCTION

The plant has been using by both Indians and natives of America as a medicinal plant since ancient age<sup>3,5</sup>. Roots and leaves of the plant contain saccharine which can be converted into syrup and sugar by evaporation and into liquor by fermentation. Natives of Mexico extensively use this plant in the preparation of a drink "pulque" which is capable of causing considerable intoxication. The fresh juice is said to be diuretic, laxative and emmenagogue. The plant has a local reputation as a remedy for hydrophobia. A striking case is quoted by the Homoeopathic Recorder from El Siglo Medico about a boy who developed symptoms of hydrophobia after being bitten by a rabid dog and was completely cured with this drug.<sup>1</sup>

#### AIMS AND OBJECTIVES

To find out the pathogenetic effects of *Agave americana* on healthy human volunteers.

#### Literature review:

Botanical name	:	<i>Agave americana</i>	Linn.
Family	:	Amaryllidaceae	
Synonyms	:	Hindi	: Barakhawar
	:	English	: Century plant
	:	French	: Maguey
	:	German	: Agave



*Agave americana*

#### Description

A perennial succulent plant with fibrous roots. Leaves stout, commonly variegated yellow, sharply constricted into neck just above the very swollen base, lanceolate, up to 1.82 m. long, very thick fleshy with hard spines along the margins and at the apex. Scape often up to 9 m. in height, branched, arborescents. Flowers yellow, in a pyramidal penicle at the top of a scape. Corolla tube contracted in the middle; pedicel as long as corolla. Fruit a pod, coriaceous and many seeded; seeds flattened.<sup>4</sup>

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**Part used in Homoeopathy**

Leaf

**Distribution**

Native of China and America extending up to Florida, also in Mexico, central and tropical America, and India.

**Toxic effects**

Juice obtained from *Agave americana* can cause acute contact dermatitis. It may produce reddening and blistering lasting one to two weeks. It acts as a fish poison and may be toxic for human beings too. Possesses insecticidal or insect repellent property. Digestive irritant, causes liver damage<sup>5</sup>.

**MATERIAL AND METHODOLOGY**

**Subject**

Twenty eight apparently healthy, male and female provers between the age group of 18-45 years were taken for this study. Out of twenty eight provers, twenty were kept on drug (varum) and eight were controlled provers. The specialists included in this study were General Physicians, Psychiatrists, Cardiologists, Ophthalmologists, ENT Specialists, Dermatologists, Gynaecologists and Radiologists.

**Drug**

*Agave americana* in 6c and 30c potencies.

**Location and duration of study**

Drug Proving Research Unit (H), Kolkata in 2003-04; Drug Proving Research Unit (H), Midnapore in 2001-02; Regional Research Institute (H), New Delhi in 2003-04; Drug Proving Research Unit (H), Ghaziabad in 2003-04.

**Method**

The study was conducted through randomized placebo controlled 'Drysdale's Double Blind Technique.' Before commencing the study, all provers were screened according to the drug proving protocol of CCRH. Pre-trial Medical Examination (PME) was conducted to confirm health status of the provers. All provers were assigned code numbers and the coded drugs of different quotas were supplied in separate phials bearing code numbers pertaining to respective provers. The drug was administered in descending order of potency, i.e. 30c followed by 6c.

Provers were supplied "Prover's Day Books" for recording their signs and symptoms. Each prover was interrogated by the Proving Master for verification of symptoms every day or as per the need. Complete symptoms verified by the Proving Masters were recorded in the 'Symptoms Elaborated Proforma'.

During the course of proving, the provers were referred for the laboratory investigations, if required. After completion of all the quotas, the provers were examined by the specialists as per the prescribed "Terminal Medical Examination" (TME) format.

The "Prover's Day Book Proforma", "Symptoms Elaborated Proforma" and "Pathological Report Sheets" along with TME were sent to C.C.R.H. Headquarters immediately on completion of the respective quotas for compilation of final data generated through drug proving.

**RESULTS**

The provers of Drug Proving Research Unit (DPRU), Ghaziabad and Regional Research Institute (RRI), New Delhi reported no symptoms. In DPRU, Kolkata out of eight, six provers manifested symptoms and in DPRU, Midnapore out of six, two provers reported symptoms, consequent upon the administration of drug.

**Symptoms Observed**

<b>Location</b>	<b>Symptoms Observed</b>
Mind	Forgetfulness, forgets recent events (1, 30c)
Vertigo	Vertigo, <i>agg.</i> in morning, on rising from bed, closing eyes, while walking and lying down; <i>amel.</i> by sitting (1, 30c). Sensation as if body is moving upwards and downwards (1, 30c).
Head	Frequent itching of scalp, <i>agg.</i> from exposure to cold air (2, 30c) Boil on the right side of forehead, sensitive (2, 30c) Dull pain in whole head, <i>agg.</i> in evening, <i>amel.</i> by hard pressure (1, 30c) Severe pain in head with loose stool, <i>agg.</i> in evening (1, 30c) Intense burning pain in head extending from nape of neck, <i>agg.</i> from morning to evening, <i>amel.</i> by hard pressure (1, 6c) Headache with sleepiness and weakness (1, 30c) Headache with malaise and weakness. (1, 30c) Aching pain in forehead, <i>agg.</i> from exposure to cold wind (1, 30c)
Eye	Burning sensation in eyes with lachrymation (1, 30c) Burning pain in both eyes, <i>amel.</i> by closing eyes (1, 6c) Redness of eyelid margins. (1, 6c) Pain in right lower eyelid with swelling, burning and itching (1, 6c)
Ear	Lancinating pain in right ear which comes suddenly and goes suddenly (1, 30c)
Nose	Bland nasal discharge, whitish in colour, <i>agg.</i> during mid day, <i>amel.</i> at night (1, 30c) Painful boil inside the right nostril (1, 30c) Sneezing with burning sensation in nose with lethargic feeling (1, 30c)
Mouth	Bitter taste (1, 6c) Dryness of mouth, <i>agg.</i> in morning (1, 6c) <i>Bleeding gums</i> <sup>1, 2</sup> , <i>agg.</i> while brushing teeth (1, 6c) Painful whitish eruptions surrounded by red area inside the mouth near incisor teeth (1, 6c)
Throat	Constriction in throat with pain in tonsils, <i>agg.</i> in morning and while swallowing, <i>amel.</i> by hot things (1, 6c)
Stomach	Frequent belching, <i>agg.</i> in morning (1, 30c) Nausea, offensive vomiting followed by weakness, thirst (1, 30c) Thirst increased with cramping pain in abdomen (1, 6c)
Abdomen	Gurgling and rumbling sounds in whole abdomen with offensive flatus (1, 6c) Cramping pain in right upper abdomen, <i>amel.</i> by pressure (1, 6c) Colicky pain about umbilical region before stool (1, 6c) Cramping pain in abdomen around umbilicus (1, 30c)
Rectum	Burning sensation during stools (1, 30c) Burning pain in rectum while passing soft, offensive stool; strains a lot; offensive flatus (1, 6c)
Stool	Profuse watery stool with undigested food particles (1, 30c) Prostration after loose stool (1, 30c).

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	Loose watery offensive stool followed by semisolid stool, <i>agg.</i> at night (1, 6c) Loose stools with offensive flatus, <i>agg.</i> at night followed by solid offensive stools (1, 6c) Prostration after loose stool (1,30c)
Cough	Dry cough, <i>agg.</i> in afternoon, at night, <i>amel.</i> by hot drinks (1, 30c)
Chest	Palpitation, <i>agg.</i> on rising in morning (1, 6c) Stitching pain in left side of chest, <i>agg.</i> by sitting erect and walking, <i>amel.</i> by lying in bed (1, 6c)
Neck	Macular eruptions on right side of neck with burning pain (1, 6c)
Back	Tearing pain in lumbo-sacral region, <i>agg.</i> in morning. Pain gradually increases and extends to hip joints, <i>agg.</i> by engaging in some work and rapid walking, <i>amel.</i> by sitting or taking rest in one position for a long time, (1, 6c) Pain in sacro-iliac region, <i>agg.</i> by standing, sitting, lying down (1, 6c)
Extremities	Painful boil in right loin (1, 30c) Dry, itching of finger tips of left hand, <i>agg.</i> at night (1, 6c) Aching pain in left elbow, <i>agg.</i> during day time (1, 30c) Pain in left leg from knee to ankle, <i>amel.</i> in evening (1, 30c)
Sleep	Sleepiness in afternoon with weakness (1, 30c)
Skin	Voluptuous itching all over the body, burning sensation after scratching, <i>amel.</i> by cold water application (1, 30c)
General	Malaise and weakness with headache (1, 30c) Weakness after vomiting (1, 6c)

- *In parenthesis, 1<sup>st</sup> no. after every symptom denotes no. of prover produced that particular symptom and 2<sup>nd</sup> no. denotes potency used.*
- *agg. (Aggravation), amel. (Amelioration).*
- *Symptoms produced during proving of the drug were compared with the homoeopathic literature cited in bibliography and those symptoms which were found in the literature, shown in italic, superscripted with numerica which refers to the particular literaturrel.*

### **Scientists involved in this study**

Dr. V.K. Khanna, Project Officer; Dr. V. Singh, AD (H); Dr. Vishnu Saxena, Research Officer (H); Dr. R.K. Ray, Research Officer (H); Dr. Swatantra Prakash, Research Officer (H); Dr. Yogendra Rai, Research Officer (H); Dr. M.K.Chakroborty, Research Officer (H); Dr. (Mrs.) Shakti Dey, Research Officer(H); Dr. N.R. Dey, Research Officer (H); Dr. A.K. Majumdar, Research Officer (H); Dr. Hari Singh, Research Officer (H); Dr. Ramendra Pal, Research Officer (H); Dr. P.C. Mal, Research Officer (H); Dr. A.K. Bhakat, Research Officer (H).

### **BIBLIOGRAPHY**

1. Hale Edwin M. *Special Symptomatology of the New Remedies*. Vol 1, 5<sup>th</sup> edition, New Delhi: B. Jain Publishers (P) Ltd., pp. 27-28.
2. Nadkarni's Dr. K.M. *Indian Materia Medica*. Vol. 1, 3<sup>rd</sup> edition, Bombay: Bombay popular prakashan.1976 p 54.
3. Clarke J.H. *A Dictionary of Practical Materia Medica*. Vol-1, Reprint, New Delhi: B. Jain Publishers (P) Ltd., 1986, p 45.
4. *Homoeopathic Pharmacopoeia of India*. Vol-6, New Delhi: Govt. of India, Ministry of Health and family Welfare, The Controller of Publication, 1990, p 6.
5. *Homoeopathic Drug Provings*. Vol- 2, New Delhi: Central Council For Research in Homoeopathy, 2007, p 5.
6. Anshutz E. P. *New, Old & Forgotten Remedies*. 2<sup>nd</sup> Edition, New Delhi: B. Jain Publishers (P) Ltd., 1996, pp 15-18.