

REPORT

Study Title:
To evaluate Anti-snake venom properties
of an Ayurvedic formulation Pinak.

A Joint Venture
Govt. College of Pharmacy, Karad & TOXINDIA
Maharashtra
India.

Sponsor

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Report No.: - R/1304/IV/09

Total no. of pages in this Report –



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विशेष कार्यकारी अधिकारी

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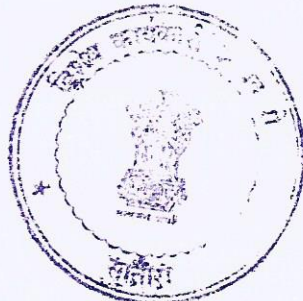
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STATEMENT OF COMPLIANCE

I, the undersigned, hereby declare that, this study no. 1304/09 entitled **Anti snake venom properties of an Ayurvedic formulation Pinak** was performed under my supervision in compliance with the test guidelines laid down in house study. No unforeseen circumstances were observed, which might have affected the quality or the integrity of the study.

I accept the responsibility for validity of the data, as well as the interpretation, analysis, documentation and reporting of the results.

This report contains _____ no. of pages including contents and tables.

Study director

Technical Director

Sudhir Borate

Vasant Narke

Date: _____

Date: _____



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QUALITY ASSURANCE STATEMENT

This Report no. R/1304/09, entitled "Anti snake venom properties of an Ayurvedic formulation Pinak" was subjected to inspections by the quality assurance manager.

Dates of the conduct of this audit, the critical phase inspected have been presented below. The quality assurance manager has audited this report.

It is considered to be an accurate account of the raw data and the procedures followed.

Date of Inspection	Type of Inspection	Phase (s) Inspected	Date of Reporting
08/07/09	Study based audit	In vitro efficacy – Cobra: Dose Range finding	08/07/09
24/09/09	Study based audit	In vivo efficacy – Cobra: Dose administration & clinical signs & mortality	24/09/09
06/10/09	Study based audit	In vivo efficacy – Viper: Dose administration & clinical signs & mortality	06/10/09
01/12/09	Study based audit	Ex-Vivo haemorrhagic activity – Viper: Tissue preparation & haemorrhagic activity	01/12/09
05/12/09	Study based audit	Ex-Vivo phrenic nerve diaphragm – Cobra: Nerve preparation & stimulation recording	05/12/09
21/01/10	Study based audit	Final report audit	21/01/10

Ujwal Narke.
Quality Assurance Unit

: _____

Date

: _____

Sudhir Borate
Study Director

: _____

Date

: _____



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➤ RESULT & DISCUSSION

RESULT

Normal Physiological solution:

On the electrically induced contractions of phrenic nerve diaphragm in normal physiological solutions produced high potentiation which was recorded on drum showed normal peak.

Venom Solution:

On the electrically induced contractions of phrenic nerve diaphragm in cobra venom solution produced inhibition of potentiation and the peak was seen almost plateau reached graph.

Pinak Solution:

On the electrically induced contractions of phrenic nerve diaphragm in **Pinak** solution produced elevated potentiation by 40 % showed on drum.

DISCUSSION

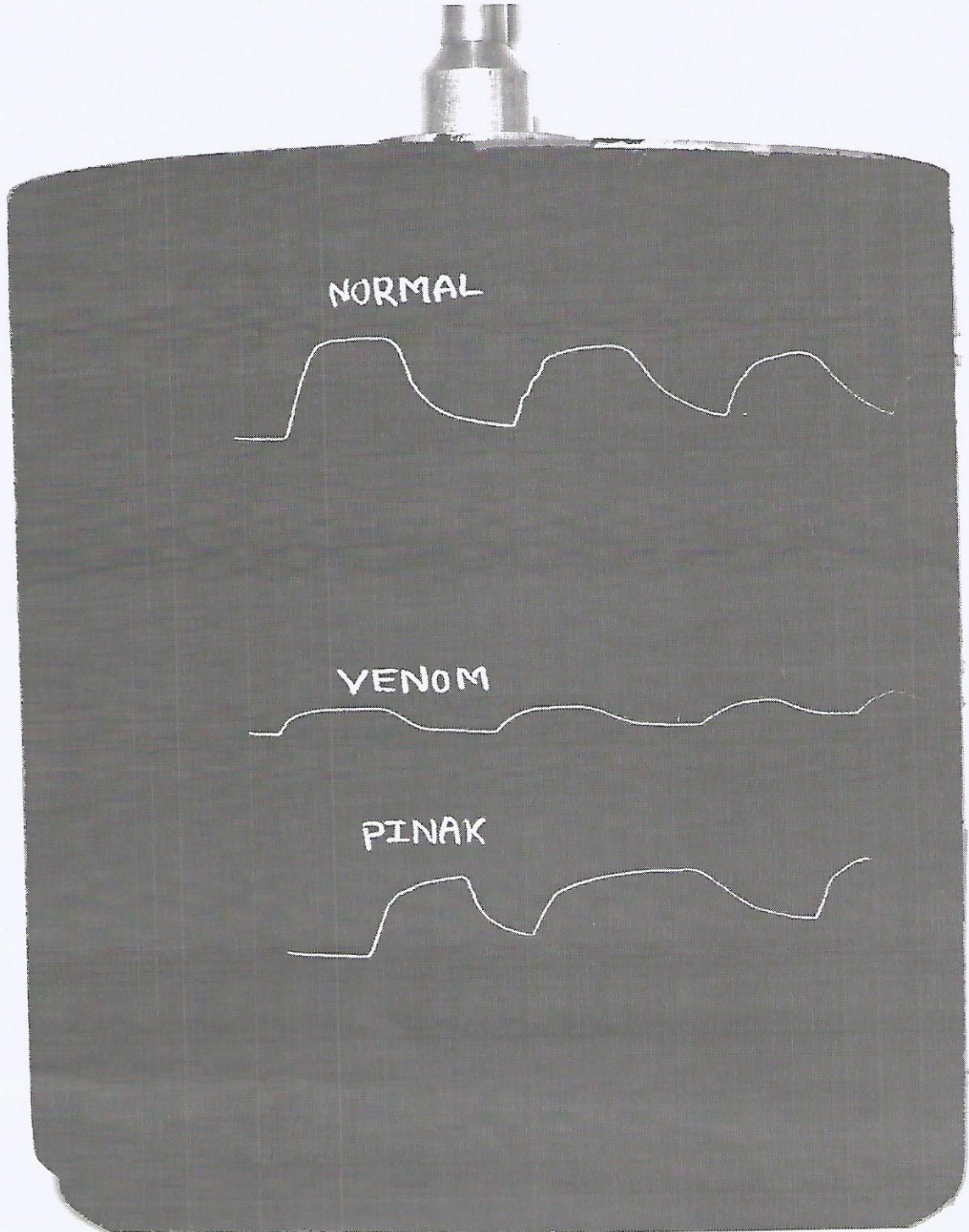
The contraction of the diaphragm was normal before adding the cobra venom showed the normal physiological neuromuscular transmission of current. When the cobra venom was added in solution the contraction of the diaphragm was decreased almost nil and showed that probably the venom blocks the neuromuscular synapses by inhibiting cholinesterase enzyme temporarily. But when the **Pinak** was added into the solution (after washout period 3-5 min of cobra venom) the contraction of diaphragm was increased moderately as compared to the normal physiological solution. The possibility of regain of contractions was due to inward flow of divalent cations and possibly helps in suppressing the action of venom on inhibition of cholinesterase which helps in normal release of ACh and helps in contraction of diaphragm.

➤ CONCLUSION

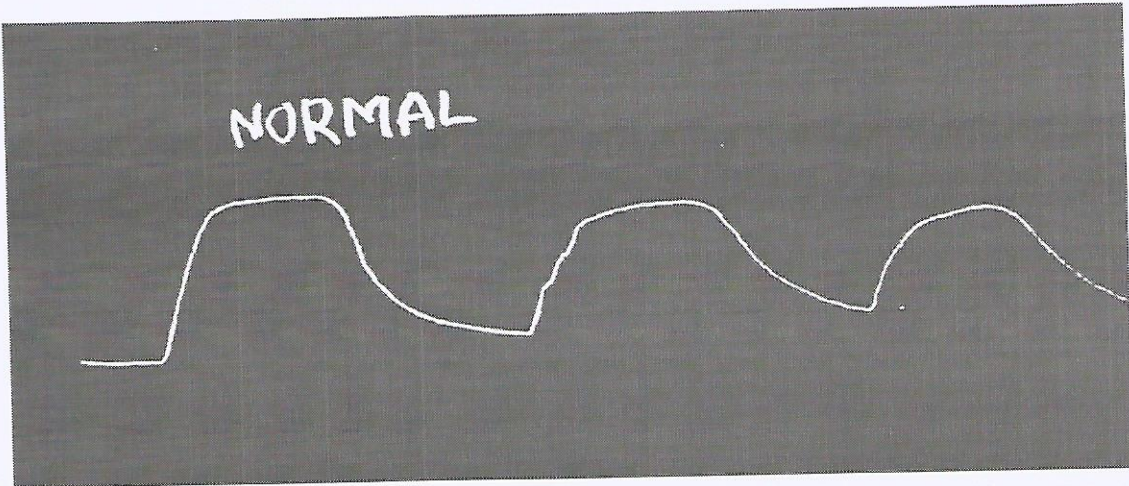
Pinak at the concentration of 7mg/ml in isolated phrenic nerve diaphragm preparation showed effective in elevating neuromuscular transmission activity when blocked by the cobra venom.



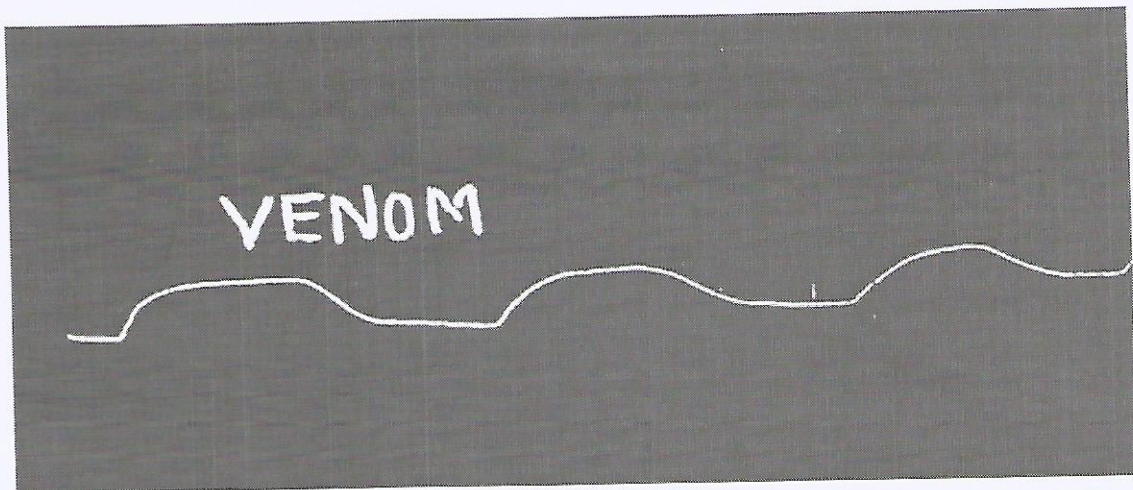
Figure 1
Action of Pinak on Cobra venom



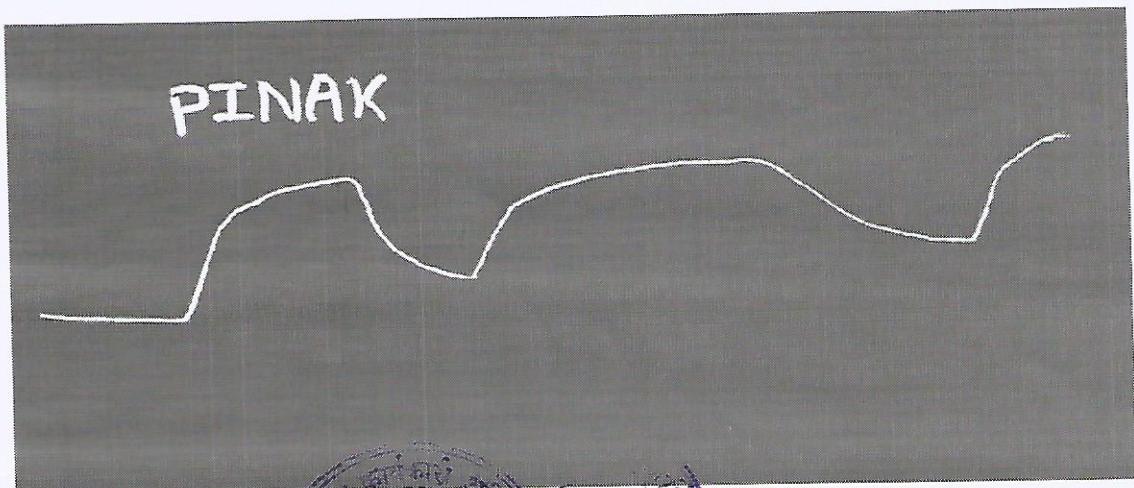
A) Graphical activity of phrenic nerve with saline



B) Graphical activity of phrenic nerve with cobra venom



C) Graphical activity of phrenic nerve with Pinak



Calculations:

$$\text{Period of contraction (Sec)} = \frac{\text{Distance covered (mm)}}{\text{Speed (mm/sec)}}$$

Speed : 2 mm/sec

Control : Time for contraction of phrenic nerve

Peak 1:

Latent period (LP) : $8/2 = 4.0$ sec

Period of contraction (PC) : $14/2 = 7.0$ sec

Period of relaxation (PR) : $33/2 = 16.5$ sec

$$\begin{aligned}\text{Total time required for one muscle twitch} &= \text{LP} + \text{PC} + \text{PR} \\ &= 4.0 + 7.0 + 16.5 \\ &= 27.5 \text{ sec}\end{aligned}$$

Peak 2:

Latent period (LP) : $8/2 = 4.0$ sec

Period of contraction (PC) : $9/2 = 4.5$ sec

Period of relaxation (PR) : $31/2 = 15.5$ sec

$$\begin{aligned}\text{Total time required for one muscle twitch} &= \text{LP} + \text{PC} + \text{PR} \\ &= 4.0 + 4.5 + 15.5 \\ &= 24.0 \text{ sec}\end{aligned}$$

Peak 3:

Latent period (LP) : $8/2 = 4.0$ sec

Period of contraction (PC) : $8/2 = 4.0$ sec

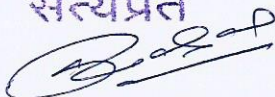
Period of relaxation (PR) : $35/2 = 17.5$ sec

$$\begin{aligned}\text{Total time required for one muscle twitch} &= \text{LP} + \text{PC} + \text{PR} \\ &= 4.0 + 4.0 + 17.5 \\ &= 25.5 \text{ sec}\end{aligned}$$

$$\begin{aligned}\text{Mean time for contraction of phrenic nerve} &= 27.5 + 24.0 + 25.5 / 3 \\ &= 25.67 \text{ sec}\end{aligned}$$

R/1304/IV-V/09



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