



Efficacy of Arkadi Agada Lepa in Honey Bee Sting in Albino Mice

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ABSTRACT: In *Samhita Granthas* many *Keetas* are explained, some of them are never heard before. Today not only their existence but also their availability is difficult. Due to honey bee sting patient initially complaints of pain, swelling, redness of skin around sting. Severe side effects as nausea, fainting & in extreme cases patient may get die due to anaphylactic shock. According to *Ashtang Hruday Uttarsthan* for all type of *kita visha Arkadi Agad* is beneficial. Honey Bee is included in *kita visha* .considering the importance of local application (*lepa*) in all types of poisoning. *Arkadi Agad Lepa* selected to study its effectiveness in honey bee sting in Albino Mice.

KEYWORDS: Keetas, Keeta visha, Honeybees, Lepa, Arkadi agada

INTRODUCTION

Insect bite is very common and usually it is ignored. Cases of honey bee stings are very common in clinical practice. Most of these bites are less harmful and negligible but sometimes poisonous bites could lead to various complications i.e anaphylactic shock. In *Charak samhita visha chikitsa 24 upkramas* (24 modalities of treatment of poisoning) are mentioned for treatment of *vishas*, out of that *lepa* application is one of them. By applying *lepa* locally at the site of bite (*DANSHA STHANA*) the poison should be removed completely. If it is not removed completely then its residual may recur the toxic effect or it will get converted into *DUSHI VISHA*. Therefore local application (*Lepa*) in all types of *visha* (poison) is necessary^[1]. Honey bee sting causes more local signs and symptoms than systemic and therefore local treatment is more beneficial.

AIMS AND OBJECTIVES

AIM:

To study efficacy of *Arkadi Agada lepa* in Honey bee sting in Albino Mice.

OBJECTIVES

1. Literature Study of toxicity of Honey bee Sting.
2. Literature Study of *Arkadi Agada Lepa*.
3. To study local effect of *Arkadi Agada lepa* on *Apis Cerena Indica* bite site locally with sting and without sting.

MATERIAL AND METHOD

DRUG REVIEW

According to *Astang Hruday Uttarsthan* *Arkadi Agad* is useful in all *keeta visha*.^[2]

Honey bee is included under *kita visha*.

Contents of *Arkadi Agada Lepa-*

1. *Arka Ksheer*
2. *Shirish beej churna*
3. *Pippali phal churn*

1. *Arka*

Botanical Name- *Calotropis gigantea*

Family- *Asclepiadaceae*

Synonyms - *Alarka, Mandara, Ksrparna, Arkaparna, Asphota, Vikirana*

Types

***Arka* is of 2 Types**

1. *Shwet Arka* (White)
2. *Rakta Arka* (Red)

Generally *raktaarka* is termed as '*Arka*' where as *shwetaarka* have a specific term i.e '*Alarka*' or '*Rajaarka*'. It is also known as '*mandar*' and its latin name is *C.gigantia*.

Major Chemical Constituents

1. **C. gigantea-** *laurane, saccharose, giganteol, calotroposide, calactin, calotoxin, calotropins D1 & D2, gigantini etc*
2. **C. procera – α & β -** *amyrins, calactin, calotoxin, calotropagenin, calotropin, calotropain, proceroside, proceragenin etc*

Properties^[3]

<i>Rasa</i>	<i>Katu- Tikta</i>
<i>Guna</i>	<i>Laghu, Ruksha, Tikshna</i>
<i>Virya-</i>	<i>Usna</i>
<i>Vipaka</i>	<i>Katu</i>
<i>Karma</i>	<i>Vatahara, Recana, Vishaghna, Dipana</i>

Karma^[4]

***Dosha Karma* –**

Because of its *ushna guna* it is *kapha vatashamak*. As *rakta arka pushpa* is *tikta madhur* in *rasa* it is *kapha pittashamak*.

Systemic Function

Externally –

Vedanasthapan, Sthothahar, vranashodhan, kushthaghna, jantughna.

Internally

***Pachana sansthan* –** *Vamanopag, dipan, pachan, pittasarak, rechana, krimighna.*

***Raktavaha sansthan*–** Its root bark is *hridayuttejak, raktashodhak, shothahar*

***Shwasana sansthan*–** *Kaphanissaraka, shwashara*

***Twacha*–** *Swedajanan, kushthaghna*

***Tapakrama*–** root bark is *jwaraghna, vishamjwaraghna*

***Satmikaran (Assimilation)* –** *Vishaghna* (neutralizes poison)

Rogaghната^{[5],[6],[7]}

Sophahara, Vranahara, kandu, kustghna, Arsas, Krmi, Pliharoga, Medoroga, Visha, Visarpa, Udara, Gulma, Graharoga, Yakritodara, Raktavikara, Grahabadha, Kaphaja roga, Visuchika, Shirovaata, Shankhavaata etc.

Therapeutic Uses-

- 1) *Pliharoga*- *Arka* leaves and salt are burnt by closed heating. This is given with curd water.
- 2) *Netra roga*- seeds of *arka* processed in milk is useful
- 3) *Arsas*- Fumigation with root of *Arka* and *Sami* will be beneficial
- 4) *Gandamala*- Paste made out of *arka ksira*, *japa puspa*, oil and *lakssarasa* may be applied externally for a week

Part Used- Root bark, flower, leaf, latex, seeds

Dosage- Root bark powder 0.5-1g, flower powder 1-3g

Important preparations- *Arka tailam*, *Arka lavana*, *Arka vati*, *Ravimuladi Vati*

Pharmacological activities^[8]

Antiinflammatory, wound healing activity, Analgesic activity, Antibacterial, Insecticidal activity, Anticandida activity, Procoagulant activity, Antioxidant activity, Antidiarrhoea activity, Antipyretic activity, Hepatoprotective

SIRISA

Botanical Name – *Albizia lebbbeck*

Family- MIMOSOIDEAE

Synonyms- *Kapitanch*, *Mrdu puspa*, *Bhandirah*, *Bhandi*, *Sukataru*, *Suka priya*, *Suka puspa*

Different varieties-

Raja Narahari described two varieties viz., *Sirisa* and *Kantaki Sirisa*.

In one context *Susruta* mentioned five varieties i.e *Panca Sirisa*

Properties-

Rasa	<i>Kasaya, Tikta, Madhura</i>
Guna	<i>Laghu, Ruksha, Tikshana</i>
Vipaka	<i>Katu</i>
Virya	<i>Usna (Anusna)</i>
Karma	<i>Tridosahara, Varnya, Visaghna, Sothahara, Vednasthapana Vranaropana</i>

Karma^[9]

Dosha karma – It is *Tridosha shamak*, because of its *ushna guna* it is *vata shamak* and due to its *kashay, tikta rasa* it is *pitta* and *kapha shamak*.

Systemic Function

Externally – *Shothahar, Vednasthapan, Varnya, Vishaghna, Shirovirechan*

Internally

Pachana sansthan– *Stambhan* (suppression), *vamak* (In heavy dose it is emetic in nature)

Raktavaha sansthaan- *Raktashodhak, Shothhar*

Shwasana sansthaan- *Shirovirechan, kaphaghna*

Prajanan sansthaan– *vrishya*

Twacha– *kushthaghna*

Satmikaran (Assimilation) – *Vishaghna* (neutralizes poison)

Rogaghna^{[10],[11],[12],[13]}

Sotha, Kasa, Swasa, Hikka, Visarpa, Kustha, Krmi, Visa roga, kita visha, Dushivisha, Mushaka visha, netra roga, Sirahshool.

Therapeutic Uses-

- 1) *Sarpavisa*- *Sveta Marica* soaked in *Sirisa* flower juice for 7 days is used for *nasya*, *pana*, and *Anjana*
- 2) *Suryavarta & Ardhavabhedaka*- *Nasya* of the seeds of *sirisa* & *Mulaka* may be useful
- 3) *Kustha*- Paste of the bark of *sirisa* is useful

Part used- Stem bark, seeds, flower, leaves

Dosage- Powder 3-6 g, decoction 50-100ml, fresh juice 10-20 ml.

Important preparations- *Sirisarista*, *panca sirisa ghrta*, *pancasirisagadah*.

Pharmacological activities^[14]

Albizia lebeck pharmacological actions are Anti-inflammatory, Anthelmintic, Blood purifier, Astringent, Demulcent, Anti-asthmatic, Emollient, Anti-dysenteric, Anti-diarrhoel, Tonic, Refrigerant.

PIPPALI

Botanical Name- *Piper longum* Linn.

Family- PIPERACEAE

Vernacular Names-

Sanskrit	<i>Kana, Krsna, Kola, Capala, Tikсна Tandula, Magadhi, Vaidehi, Usana, Soundi</i>
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Different Varieties-

Susruta and *vagbhata* have delineated two varieties of *pippali* viz. *pippali* (*P. longum*) and *Gaja Pippali* (*P. chaba*).

Properties-

Rasa	<i>Katu</i>
Virya	<i>Usna (Arđra- Sita)</i>
Vipaka	<i>Madhura</i>
Guna	<i>Laghu, Snigdha, Tikshna (Arđra- Guru)</i>
Karma	<i>Vata- Slesmahara (Arđra- Kapha vardhaka), Dipana, Vrsya, Rasayana</i>

Karma

Dosha karma – Because of its *katu rasa* it suppresses *kapha* and due to its *snigdha guna* it suppresses *vata*.

Systemic Function

Externally – *Rakta utkleshak, jantughna, Shirovirechan* (head evacuative)

Internally

Naadisansthaan– *Medhya, vatahara*

Pachanasansthaan– *Dipana, triptighna, vatanuloman, shoolprashaman, plihavridhdihar, krimighna*

Shwasansansthaan – *Kasahara, shwasahara, Hikkanigrahan*.

Mutravahasansthaan– Because of its *madhur vipaka* it is *Mutral*

Prajanansansthaan– Its root work as *garbhashaysankodhak* and *phal vrishya*.

Twacha– *Kusthaghna*

Taapkram– *Jwaraghna*

Satmikaran (Assimilation) – *Rasayan, Balya*

Indications-

Udara, Pliharoga, Jvara, Kustha, Prameha, Gulma, Arsas, sula, Amavata

Therapeutic Uses-

- 1) *Kamala- pippali* is used as *Nasya* and *Anjana*
- 2) *Rasayana- Ghee* prepared with *pippali* & milk will be useful
- 3) *Chardi- pippali* should be given with honey and sugar
- 4) *Svasa-* powder of *pippali*, *Amalaki* and *sunthi* is taken with honey and sugar

Part Used- Fruit, root

Dosage- powder 0.5-1g

Important preparations- *Pippalyadighrta*, *vyosadi vati*, *pippalyasava*, *yakrta pippali yoga*, *yakrtplihari loha*, *pippalyadi leha*, *causastaprahara pippali*.

Pharmacological activities^[15]

Anti-inflammatory, Antifungal, Antimicrobial, Antiamoebic, Antioxidant
Radioprotective, Analgesic, Anticancer, Antiplatelet, Larvicidal
Antihyperlipidemic, Hepatoprotective, Immunomodulatory

Preparation of *Arkadi Agada Lepa*:

Collection of Ingredients of *Arkadi Agada Lepa*:

Arkadi Agada Lepa has total three contents that are, *Pipalli*, *Shirish*, *Arka Ksheer*
Shirish beeja churna and *Pippali Phal Churna* were collected from well known *ayurvedic*
pharmacy.

Arka Ksheer freshly collected from herbal garden of our institute.

Authentication of Ingredients of *Arkadi Agada lepa*:

Authentication of *Arkadi Agada Lepa* contents were done at *Dravya Guna* department of our institute.

Method for preparation of *churna*

As the sample of *shirish beej* and *pipalli phal* were collected they were washed with water so as to remove impurities from them and then they dried. By using a grinder they are crushed separately so as to reduce its size to a fine powder and then filtered by using piece of clean cloth.

Method for preparation of *Arkadi Agada Lepa*:

In *Arkadi Agad Lepa* three ingredients are mentioned, but their ratio is not mentioned, according to *Sharangdhar Samhita*, where no proportion is mentioned all contents of that *yog* is to be taken in same proportion.^[16]

According to reference of *Astang Hruday Uttarsthan* in *Arkadi Agada lepa Shirish beeja churna* is triturated thrice with *arka ksheer* and equal proportion of *Pipalli phal churna* added. Water taken as a base. Consistency of *lepa* not be so thick and so thin.

Animal Experiment Study

Protocol for Animal Experiment:-

Animal species	Mice
Strain	Swiss Albino Mice
Source of Animal	Government recognized Animal house
Sex of Mice	50% of Males & 50% Females
Average wt. of Mouse	20-25 grams
Number of Mice	6 in each group
Age of Mice	6-8 weeks
Period of Acclimatization	7 days
Route of drug Administration	Local application of <i>Lepa</i>

Groups in Animal Experiment:

There are three groups

Group No.	Group Name	Local Application
1.	Control Group	No drug i.e. Natural Healing
2.	Standard Group	Beclomethasone-0.025%
3.	Experimental Group	<i>Arkadi agada lepa</i>

Dose calculation of *Arkadi Agada Lepa* local application^[17]

As per *Sharangdhar*, *vishaghna lepa* application should be one third of *anguli*.

But considering the weight and age of Albino Mice, I applied the *lepa* in dose so that it covered the inflammation site and the whole wound and the *lepa* is not so thick & not so thin.

Dosage: Once a day as a local Application.

Methods of experiment

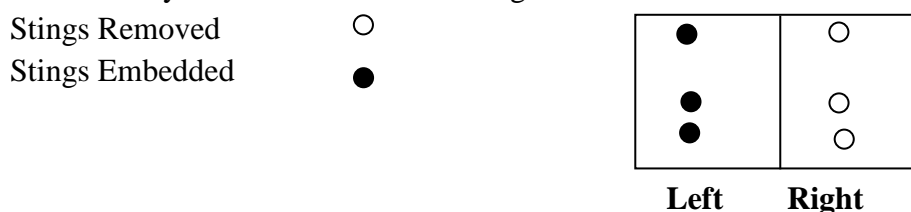
A) Preparation of Mice before sting procedure-

Before initiation of experiment all Mice were prepared. Approximately 24 hours before the study, by using hair removing cream only required area from back of each mouse hair was removed first.

Mice of 20-25gm were selected. Out of which 50% males and 50% females and kept under observation before sting as they should remain healthy and free from any infection.

B) Sting procedure in mice

1. Identification of groups of male and female mice is done by staining with Picric acid.
2. Each spot was marked first and then sting was given to the back one by one maintaining safe interval between the two stings.
3. Six honey bees were allowed to sting in all animals on bare skin site as follows:



1. In each mouse out of six stings three stings were removed from one site where as other three sites were not remove.
2. The test material and standard marketed drug were applied locally on the back of the animals at the sting sites. The honey bee sting disease control group did not receive any treatment.
3. Animals were observed individually daily for seven days. Skin reactions and other signs were observed and recorded for individual animals.
4. Rating of skin reaction was evaluated as per BIS (Bureau of Indian Standards) 1992.
5. During observation Erythema, Scaling, Fissure, Oedema, Eschor were assessed.
6. Daily for the duration of 7 days, reduction in the local effect of bee sting was studied in-
 1. Control group - No drug (no medicine was applied i.e Natural healing)
 2. Standard drug group (Beclomethasone 0.025%)
 3. Experimental group- (*Arkadi Agada Lepa*)
7. Histopathology of skin was studied at the end of experiment.

Assessment criteria

For Experimental Rating of Skin Reaction:^[18]

(As per Smith -Textbook of Medicine)

	Skin Reaction	Rating
A)	Erythema	
1)	Slight /diffuse, spotty	1+
2)	Moderate uniform redness	2+
3)	Intense	3+
4)	Flery red with oedema or epidermal defect (vesicle/necrosis)	4+

B)	Scaling	
1)	Dryness shiny	1+
2)	Fine scale	2+
3)	Moderate	3+
4)	Severe with large flakes	4+

C)	Oedema	
1)	No Oedema	0
2)	Very slight Oedema	1+
3)	Slight Oedema (edges of area is well defined by definite raising)	2+
4)	Moderate Oedema (raised app 1 mm)	3+
5)	Severe Oedema (raised more than 1mm & extending beyond area of exposure)	4+

D)	Fissure	
1)	Fine cracks	1+
2)	Single/ multiple broader fissure	2+
3)	Made cracks with hemorrhages or exudation	3+

E)	Erythema and Eschor formation	
1)	No erythema	0
2)	Very slight erythema	1+
3)	Well defined Erythema	2+
4)	Moderate to severe erythema	3+
5)	Severe erythema (best redness) Eschor formation (injury in right depth) Total possible score	4+

8. During observation Erythema, Scaling, Fissure, Oedema, Eschor were assessed.
9. Daily for the duration of 7 days, reduction in the local effect of bee sting was studied in-
 1. Control group - No drug (no medicine was applied i.e Natural healing)
 2. Standard drug group (Beclomethasone 0.025%)
 3. Experimental group- (*Arkadi Agada Lepa*)
10. Histopathology of skin was studied at the end of experiment.

OBSERVATION & RESULTS

During observations:

Erythema and Oedema was predominately observed in all mice., while Inflammation, Scaling, Fissure, Eschor formation not observed.

Statistical analysis:

For above subjective criteria, to see the significance within group Wilcoxon Signed rank test was applied and for comparison in all groups Kruskal Wallis test with Dunn’s comparison (non-parametric test) was applied.

Observations:

MASTER CHART

		With sting					
Group	Ani No.	Erythema			Oedema		
		1 DAY	7 DAY	diff	1 DAY	7 DAY	diff
Control group	M1	2	1	1	1	1	0
	M2	3	2	1	2	2	0
	M3	3	3	0	2	1	1
	F4	2	1	1	1	0	1
	F5	2	2	0	2	1	1
	F6	2	1	1	1	1	0
Group	Ani No.	Erythema			Oedema		
		1 DAY	7 DAY	diff	1 DAY	7 DAY	diff
Standard Group	M7	3	1	2	4	2	2
	M8	2	1	1	3	2	1
	M9	2	1	1	2	1	1
	F10	3	1	2	1	0	1
	F11	2	1	1	3	1	2
	F12	3	2	1	2	0	2
Group	Ani No.	Erythema			Oedema		
		1 DAY	7 DAY	diff	1 DAY	7 DAY	diff
Exp Group	M13	2	0	2	3	1	2
	M14	3	1	2	2	1	1
	M15	2	0	2	4	1	3
	F16	4	1	3	3	1	2
	F17	3	1	2	2	0	2
	F18	3	1	2	3	1	2

		Without sting					
Group	Ani No.	Erythema			Oedema		
		1 DAY	7 DAY	diff	1 DAY	7 DAY	diff
Control group	M1	1	1	0	2	2	0
	M2	2	2	0	2	1	1

	M3	2	2	0	2	1	1
	F4	1	0	1	1	1	0
	F5	2	1	1	2	1	1
	F6	2	1	1	1	1	0
Group	Ani No.	Erythema			Oedema		
		1 DAY	7 DAY	diff	1 DAY	7 DAY	diff
Standard Group	M7	2	1	1	1	0	1
	M8	3	1	2	2	1	1
	M9	1	0	1	2	0	2
	F10	2	2	0	3	0	3
	F11	1	0	1	2	0	2
	F12	2	0	2	2	1	1
Group	Ani No.	Erythema			Oedema		
		1 DAY	7 DAY	diff	1 DAY	7 DAY	diff
Exp Group	M13	2	1	1	4	1	3
	M14	2	0	2	2	0	2
	M15	2	0	2	3	0	3
	F16	3	1	2	3	1	2
	F17	2	1	1	2	0	2
	F18	2	0	2	2	1	1

For above mentioned subjective criteria comparison was done on Day - 1 and on Day 7 for the local effect of bee sting on albino mice in all three groups i.e.in control, standard and experimental group.

Statistical analysis was carried out in both male and females with sting and without sting in all groups by applying Wilcoxon signed rank test and Kruskal wallis test.

Histopathology results:

Histopathology results indicates that the skin of disease control animals showed Mild congested blood vessels and presence of inflammatory and edematous changes in connective and sub-cutaneous tissues. A few inflammatory cells and mononuclear cells were found to be infiltrated in the dermal and epidermal layer at the site of injury with varying number of neutrophils, macrophages, polymorphonuclear leukocytes. Healing of skin tissue was not complete and tissue showed dilation of vascular tissue in dermis and subcutaneous tissue.

In the standard drug treated mice the following observations were noted. The skin tissue section showed mild healing of epidermal layer with normal histomorphological features. Occasional very few inflammatory and mononuclear cells in the sub-cutaneous tissue and connective tissue were observed.

In the test material treated mice the similar histopathological observations were noted as that of standard drug treated mice.

The skin tissue section showed mild healing of epidermal layer with normal histomorphological features. Occasional very few inflammatory and mononuclear cells in the sub-cutaneous tissue and connective tissue were observed.

Based on the above results it can be concluded that the Experimental drug helped in minimizing the pathological changes caused by honey bee sting. However detailed studies are required to validate the hypothesis.

DISCUSSION

In *Ayurveda visha* or poison is mainly divided into two categories i.e *sthawara* and *jangam*. *Keeta visha* is included in *Jangam visha*. In *Keeta visha makshika Damsha* (Honey bee bite) is included. Honey bee bite causes pain, inflammation and in some individuals it causes anaphylactic shock also. Therefore there is a need to have very cost effective and easily available treatment with least side effect. By keeping all this aspect in view I had selected *Arkadi Agada Lepa* in honey bee sting as mentioned by *Acharya vagbhata* in *uttarsthana Adhyaya* thirty seven “*keetalutadi vishapratishedh*” for all type of *keeta visha*. In this study the local effect of *Arkadi Agada Lepa* local application was estimated in albino mice for acute toxicity study for seven days.

Animal Experiment: Experiment was performed at Government recognized animal house. It is study of two main drugs one of *Ayurvedic Lepa Arkadi Agada* and second one standard drug Beclamethasone 0.25% into three groups i.e control, standard and Experimental. There were total eighteen albino mice. In each group six mice were taken, three male mice and three female mice. weight of mice was 20-25 grams.

Before study hair of mice is removed from backside. Honey bees were allowed to sting in all animals on bare skin site. The three stings were removed from one site whereas other sites were not remove keeping safe distance between them. During study only Erythema and oedema were found whereas scaling, fissure and eschor formation was not observed and further it taken for statistical analysis in both with sting and without sting in albino mice.

Observation and Result

❖ With sting:

For subjective criteria, to see the significance within group Wilcoxon Signed rank test was applied. In control group for Erythema p value was found to be 0.12 and for odema p value was 0.25 which are greater than 0.05 hence suggestive of statistically insignificant day 1 and day 7.

In standard group p value for both Erythema and odema is 0.03 which was < 0.05 suggestive of statistically significant at 5% level significance on day 1 and day 7.

In Experimental group for both Erythema and odema p value observed was 0.03 which was < 0.05 suggestive of statistically significant at 5% level significance on day 1 and day 7.

For comparative analysis in group kruskalwallis test was applied. Erythema for three different group the mean rank of control group was 4.83, standard group 9.00 and in experimental group and p value obtained was 0.002 which is lesser than 0.05. So Dunn's multiple comparison test was applied.

For oedema mean rank of control was 4.5, standard 10.5, and experimental group 13.5 respectively and p value obtained was 0.006 which is < 0.05 and considered as highly significant thus, the groups were comparable for this symptom. There is significant difference observed among three groups in 14.67 symptom oedema.

So Dunn's multiple comparison test was applied. In Erythema it shown that control vs experimental group has mean rank difference -9.83. There is moderately significant difference observed in control group and experimental group as p value was < 0.01.

In oedema, there is significant difference in control group and experimental group as p value obtained was < 0.05 which was considerably significant.

❖ Without Sting

For subjective criteria to see significance within group comparison Wilcoxon Signed rank test was applied. In control group for symptom Erythema and oedema P value was 0.25 which is greater than 0.05 so it was statistically non significant reduction at 5% level of significance.

In standard group in erythema P value observed was 0.06 which is not significant at 5% level of significance. So, there is no significant difference found in standard group in day 1 and day 7. However in oedema p value was 0.03 which is < 0.05 . so there is quite significant difference observed on day 7 compare to day 1.

In Experimental group for both Erythema and Oedema P value observed was 0.03 which is < 0.05 at the level of 5 % of significance. So there is significant difference on day 1 and day 7.

For different parameters in albino mice for Erythema by Kruskalwallis test mean ranked for control, standard and Experimental group was 5.5, 9.83, 13.16 and P value was found to be 0.02 which is lesser than 0.05 hence within group comparison is possible.

For Oedema, mean rank for control was 4.5, standard 10.66 and Experimental group 13.33 and P value was 0.008 which is less than 0.05 hence three group comparison is possible.

By applying Dunn's multiple comparison for three groups for Erythema parameters in control Vs Experimental group had significant difference at 5% level of significance with mean rank difference is -7.66 which is lesser than 0.05. For oedema parameter in control Vs Experimental group mean rank difference is -8.833, P value is < 0.01 which shows considerably significant it means both groups have difference in effect of intervention in albino mice without sting.

During study it is found that

- As compared to male albino mice female albino mice is sensitive to sting.
- The healing time required for with sting in albino mice is more than without sting.
- Experimental and standard group were both effective in healing of bee wound whereas control group was not significant
- Collected data was subjected to statistical analysis in various aspect as;
 - comparison between three groups i.e disease control, standard and experimental group
 - Comparison between with and without sting group was done.

Arkadi Agada Lepa was found effective by local application in local sign and symptoms of honeybee sting in Albino mice.

CONCLUSION

The present study indicate that *Arkadi Agada Lepa* is effective in reduction of local signs and symptoms of honey bee sting thus shown its antitoxic properties. So, the use of *Arkadi Agada Lepa* can be recommended locally in honey bee sting. According to various *ayurvedic* text, *granthas*, *nighantu* the contents present in *Arkadi Agada Lepa* have *vishaghna*, *vednahar*, *shothaghna* and *vranaropana* properties. According to modern aspect also the contents present in *arkadi agada* has Antiinflammatory, analgesic and wound healing properties. During experimental study it was found that the test drug *Arkadi Agada Lepa* help in reducing the local sign and symptoms in honey bee sting.

Statistically it was found that experimental drug has better results while standard group also showed the significant results compared to the control group in reducing the symptoms of bee sting in albino mice,

especially on albino mice without sting. So, it is concluded that both standard and experimental drug are equally effective.

Histopathology indicates that in control group the healing of skin tissue was not complete and tissue showed dilatation of vascular tissue in dermis and subcutaneous tissue whereas in both experimental and standard drug the skin tissue section showed mild healing of epidermal layer with normal histomorphological feature.

As per statistical analysis and histopathological study both experimental drug *Arkadi Agada lepa* and Standard drug beclamethasone are equally effective hence *Arkadi Agada Lepa* proves its efficacy in reducing local sign and symptoms in Albino mice. Hence it can be further use for honey bee sting bite.

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