

## EFFECT OF MADHUSARPI IN SADYOVRA- A CONCEPTUAL STUDY

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### ABSTRACT

Healing is not a science but the intuitive art of wooing nature (W.H. Auden, "The Art of Healing"). Throughout the history man had to contend with dermal wounds, substances derived from animals, plants and minerals formed the basis of crude remedies used to staunch bleeding, reduce swelling, minimize pain, mask foul smells and promote healing. The main **objective** of the study is to understand the effects of the drug madhusarpi on fresh wounds, here is an attempt to evaluate the role of madhusarpi as external application in sadyovrana. **Conclusion:** The relentless emergence of antibiotic-resistant strains of pathogens, together with the retarded discovery of novel antibiotics, the whole world is looking towards the science-based Evidence based ayurvedic medicine for the management of infection. The drugs selected here are time tested and effective remedies being in use since thousands of years, an attempt to understand the mode of action of drug on wound.

**KEYWORD:** Sadyovrana, Dushta Vrana, Shashthi Upakrama, Madhu and Sarpi.

### INTRODUCTION

#### Nirukti

Etymology of the word "Vrana"- The words derived from the root "Vriya" having the meaning of "to recover", which is further suffixed by "ach" in the sense of Bhava. The "Ch" sound is elided and the form remains "Vran" + "a". (Shabdakalpadruma)

#### Definition

1) Vrana Gatra Vichurnane, Vranayati iti Vranaha|| (su chi-1/6)

Gatra- means tissue (tissue or part of body).

Vichurnane means destruction, break, rupture and discontinuity (of the Body parts or tissue).

The destruction / break / rupture / discontinuity of body tissue / part of body is called Vrana

2) Savranoti Acchadayati Yasmat Tasmat Vrana Iti ||  
After destruction, which gets covered is called as Vrana.

3) Vranayati iti Gatra Vaivarnya Karotii Iti Arthaha ||  
The one which gives discoloration at its site is called as Vrana.

The scars of a wound never disappear even after complete healing and its imprint persists lifelong the lesion is called vrana. (Su.su-21)

**Acharya Sushruta** -The Father of Surgery has explained "Shashti Upakramas" for the treatment of the wound (Vrana). There are 60 different regimes for the purpose of the wound healing. They cover all the aspect of the wound healing viz. rate, discoloration, scar formation etc. Among them one is taken for the study that is madhu sarpi.

"The Disruption of normal anatomical relationships as a result of injury or more specifically of trauma"/ break in the continuity of soft parts of body structures termed as wound.

- 1) PARTIAL-thickness wounds involve outer layers of the skin, epidermis and superficial dermis, and heal by regeneration of epithelial tissue (skin).
- 2) FULL-thickness wounds involve a loss of dermis (deeper layers of skin and fat) and of deep tissue, as well as disruption of the blood vessels they heal by producing a scar.

Wound healing processes include-

- 1) Primary intention-wound edges are brought together, as in a clean traumatic/surgical wound.
- 2) Secondary intention -the wound is left open and heals by epithelization.
- 3) Third intention or delayed closure- the wound is identified as potentially infected, is left open until contamination is minimized, and is then closed.

The major aspect of the management of the fresh wound is prevention of the infection and speedy healing. Reducing pain, discharge and discoloration after healing. The proper initial care of the fresh wound will definitely prevent the inadvertent use of the oral and systemic antibiotics.

#### Classification of Vrana

Vrana can be classified into different categories i.e.

1. Based on Nidana.

a) Nija Vrana

b) Agantuja Vrana

2. Based on the Avastha

a) Shuddha Vrana

b) Dushta Vrana

c) Ruhyamana Vrana

d) Roodha Vrana

#### Acc to Lakshanas

1) Samanya

2) Vishesh

Acharya Sushruta classified SadhyoVrana into 6 types based on Lakshanas.

Sr. No.	Type of Agantuja Vrana	Lakshanas
1	Chinna (Su.Chi.2/10) (Ma.Ni.43/3)	Extensive cut injury oblique or straight, separation of Parts of body.
2	Bhinna (Su.Chi.2/11) (Ma.Ni.43/4)	Perforation of Asaya and mild discharge.
3	Viddha (Su.Chi.2/19) Ma.Ni.43/11)	Deep injury Without Perforation of Asaya.
4	Kshata (Su.Chi.2/20) Ma.Ni.43/12)	Neither a cut injury nor a perforation but exhibits the nature of both uneven shaped.
5	Picchita (Su.Chi.2/21)(Ma.Ni.43/13)	Crushed injury extended filled with blood and Bone marrow.
6	Ghrishta (Su.Chi.2/22) Ma.Ni.43/14)	Rub injury skin gets peeled off, burning sensation and Discharge.

Some other types of Agantuja vrana are as follows-

Sr.No.	Types of Agantuja Vrana	Sushruta	As.sam.	As.hr.	Sha.sam.
1	Avakrta	----	+c	+	----
2	Anuviddha	----	+v	----	----
3	Atividdha	----	+v	----	----
4	Anubhinna	----	+v	----	----
5	Atibhinna	----	+v	----	----
6	Avrana	----	+p	----	----
7	Avikrta	----	----	----	+
8	Bhinna	+	----	+	+
9	Bhinnotundita	----	+v	----	----
10	Chhinna	+	+	----	+
11	Ghrishta	+	+c	+	+
12	Ksata	+	----	----	----
13	Nilambita	----	+c	----	----
14	Nividdha	----	+v	----	----
15	Nipatita	----	----	----	+
16	Pichhita	+	+	----	----
17	Patita	----	+c	+	----
18	Pravalambita	----	----	+	----
19	Prachalita	----	----	----	+
20	Savrana	----	+p	----	----
21	Uttundita	----	+v	----	----
22	Viddha	+	+	+	+
23	Vicchinna	----	+c	+	----
24	Vibhinna	----	+v	----	----
25	Vidalita	----	----	+	----
26	Vilambita	----	----	----	+

(+C: This all type of agantuja vrana comes under Chhinna category)

(+V: This all type of agantuja vrana comes under Viddha category)

(+P: This all type of agantuja vrana comes under Pichhita category)

**Description of some other Agantuja Vranas in classical texts**

Name	Lakshanas
Avakrta (As. Sa.Ut. 31/3)	Injury in skin and little portion of muscle.
Anuviddha (As. Sa.Ut. 31/4)	Injury of muscular tissues.
Atividdha (As. Sa.Ut. 31/4)	Perforation of the part and peeping outside the skin of the other side.
Anubhinna (As. Sa.Ut. 31/4)	Perforation of the Kostha.
Atibhinna (As. Sa. Ut. 31/4)	Injury in Kostha.
Avrana (As. Sa. Ut. 31/5)	Injury without vrana with mild local temperature.
Avaklipta (Sa. Pu. Kh. 7/76)	Injury with cutting type of pain, breaking of irregular extremities, loss of strength.
Bhinnotundita (As.Sa.Ut. 31/4)	Injury to the Kostha.
Nirbhinna (As. Sa. Ut. 31/4)	Injury to the Kostha by a shalya and it pierces the opposite side.
Nirviddha (As. Sa. Ut. 31/4)	Perforation of part totally.
Nishalyo vrana (Ma. Ni. 43/15)	Mild tender, mild inflammation.
Nipatita (Sa. Pu. Kh. 7/76)	Bone brakes in to many places, abnormal deformities.
Patita (Sa. Pu. Kh. 7/76)	Complete cut off of an organ.
Pracchalita (Sa. Pu. Kh. 7/76)	Injury to Asthi dhatu and causes vitiation of vayu
Pravilambita (As. Hr. Ut. 26/4)	Injury where the bone has not cut completely destroyed. Inactivity of sense organs Different type of pain, bloody discharge.
Savrana (As. Sa. Ut. 31/5)	Injury with vrana, painful and Oozing.
Sasalyasyavrana (Ma. Ni. 43/15)	Injury due to the vrana, inflammation, blackish in color.
Uttundita (As. Sa. Ut. 31/4)	Injury to the deep portion with protrusion to other side.
Vicchinna (As. Sa. Ut. 31/3)	Injury to the deep skin and greater portion of the muscle involved.
Vilambita (As. Sa. Ut. 31/3)	Injury up to the bone ligaments and muscles coming out from the vrana mukha.
Vidalita (As. Hr. Ut. 26/5)	Crushed injury along with bonemarrow damage, severe pain.

**Shuddha Vrana**

The Shuddha Vrana is also considered as one among 16 types of Nija Vrana. Before treatment it is important to know about the Shuddha and Ashuddhataa of Vrana.

Because the prognosis and treatment are different. The Lakshanas of Shuddha Vrana according to various Acharya's are as follows;

**Lakshana of Shuddha Vrana**

Sushruta samhitha (Su. Su.23/18, Su. Chi. 1/7)	Charaka samhitha (Ch. Chi. 25/86)	Astanga. Sangrha (As. San.Ut-29/12)	Astanga. Hridaya (As.Hr. Ut-25/11)	Madav. Nidana.
Surface of wound is just like tongue (Jihwa talabho)	Color of wound is reddish black (Naatirakta, pandu, shyava)	No pain (Nirujatwam)	Surface of wound is just like tongue (Jihwa talabho)	Wound surface is just like tongue (Jihwa talabho)
Recent origin (Navotita)	Mild pain (Na ati ruk)	No discharge (Nirasrava)	Soft (Mrudu)	Very soft (Mrudu)
Unaffected by the three Dosha (Trividha dosha Anakranta)	Elevation and depression are absent (Nautasanno, Nautsangi)	Color of wound is blackish (Shayava Varnata)	Surface is smooth and normal (Slakshana)	Slimy (snighda)
Edges with a slight blackish colour and having granulation tissue (Shyava Varna Pidika Yukta)		Even margins, slight elevation in the middle (Samaaustha Madhyata)	Absence of pain and secretion (Vigat Vedana Nirasrava)	Painless (Vigat Vedana)
Absence of pain (Vigata vedana)		Opposite character of Dushta Vrana		Not too much discharge (Nira srava)
Absence of secretion (Nirasrava)				
Even surface throughout the wound area (Suvyavasthita)				
Slimy surface (snighdanta)				
Regular surface (samavastita)				

**Pancha Lakshana**

The laxanas of Vrana can be discussed under the heading of Pancha Lakshanas as Akrti, Gandha, Varna, Srava and Vedana.

**1. Akrti**

Acharya Sushruta describes different shapes of the wound such as Ayata, Chatusra, Vrittha, and Triputaka. Madhumehajanya DushtaVrana as Atisamrutha,

Ativivrutha, Utsanna, and Avasanna, In the context of Agantuja Vrana - Ardhachandrakara, Vishala, Kutila, Sharava, Yavamadhyasta, Madhumehajanya Vrana is having Vishmakruti.

## 2. Gandha

Acharya Sushruta emphasized the Vikruta Gandha of various Vranas. The cardinal signs which possess a great value to access involved Dosha and Dhathi, the pradhanyata of vata produce katu gandha, pitta produces teekshna gandha, kapha produces ama gandha.

## 3. Varna

Discoloration takes place at the site of Vrana irrespective of place in every individual but the nature of discoloration varies with respect to involvement of Dosha. Vata produces bhasma, Krishna, kapota/ asthi Varna, pitta produces neela, harita, peeta, kapila Varna, kapha produces shweta / pandu Varna. Sannipataja dushti leads to mixed Varna at wound site.

## 4. Srava

Acharya Sushruta has explained different kinds of discharges observed in a Vrana based on different sites & Dosha involved. Those are as follows-

### Srava according to the site involved

1. **Tvacha Sthitha Vrana:** There will be watery discharge or slightly yellowish discharge when the Vrana is in skin.

“Vrana srava” according to dosha involved (Su. Su. 23/9)

Vrana Dosha	Vrana srava
Vata	Rough, Blackish, like frost, Yoghurt, Alkaline water, Washing of meat, Rice water.
Pitta	Gomed gem, Cow's urine, Ash powder of conchshell, Astringent water, Madhavika oil like.
Kapha	Like Butter, Kasis, Bone marrow, Rice cake, water of Coconut, Fat of pig.
Rakta	Like Pitta but more bloody discharge
Sannipataj	Water of Coconut, vinegar, liver, juice of Mudga.

5. **Vedana:** Natures of Vedana in vrana are as follows:- Todavat, bhedavat, chedanavat vedana when vata is predominant, Osha, chosha, paridaha, dhoomayanavat vedana due to pitta, Kandu, suptata, liptata, nyunyata, sheetalata due to kapha.

## SADHYA SADHYATA

### Sukha Saadhya Vrana

According to involved tissues possibilities of wound healing is explained i.e. healing becomes difficult as the Uttarottara Dhatu<sup>1a</sup> involves. With qualities like Vayastha, Pranavaan, Dhrutha, Satvavaan the patient wound can be healed easily.

### Krichrasadhya Vrana

If the Vranita is not a Vayastha, Pranavaan, Dhrutha, Satvavaan and who are Vriddha, Krusha, Alpaprana, Bheeru, then wound healing will be difficult. The Vrana

2. **Mamsa Sthitha Vrana:** If the wound is situated over the Mamsa the discharge will be like that of ghee, which is very dense, whitish and sticky.
3. **Siragata Vrana:** If the wound is situated on the vessel, then there will be excessive hemorrhage. If there is suppuration, pus flows out copiously like that of water flowing from a pipe. This type of discharge will be thin, slimy, sticky and blackish in little quantity.
4. **Snayu Sthitha Vrana:** If the wound is situated over the Snayus, then the discharge will be oily, thick and similar to the mucoid nasal discharge and it will be somewhat mixed with blood and appears to be solid.
5. **Asthi Sthitha Vrana:** If Vrana is over the bone or if bone gets traumatized, cracked or bursts due to Dosha, then the discharge will be mixed with bone marrow (Majja), blood and it will be Snigdha.
6. **Sandhi Sthitha Vrana:** When the Vrana is situated over the joints the discharge does not come out even on pressure, but when there is flexion, extension, elevation, depression or by running, coughing and straining it comes out in little quantity. It will be slimy, sticky and appears as if churned with blood.
7. **Koshtha Sthitha Vrana:** When the Vrana is situated in the abdomen, the discharge comes out mixed with blood, urine, feces, pus and water.
8. **Marma Sthitha Vrana:** The discharges of the Vrana that are caused in the Marma Sthanas have not been explained separately, as they have been included in Twagadi Sthitha Vrana.

of persons suffering from Kushtha, Shoshita and Vishajushta Vrana which is recurring at the same site are difficult to heal.

### Yaapya Vrana

Madhumehajanya vranas are yapya. The Vranas such as Avapaatika, Niruddha Prakasha, Sanniruddha Guda, Visarpa, Jatara Sthitha, and skin lesions where maggots are present, bone fracture, Urahkshata, Vrana Granthi, etc are yapya.

### Asaadhya Vrana

- Vrana which is elevated like Maamsapinda, Atisrava, Pooyayukta and with Vedana, having edges like ashwa bhagoshtha.
- Indurated and protruded like Goshringa, Discharging Dushta Rudhira, Mrudu Mamsankura, Tanu, Sheeta, Picchila Sraava, madyotsanna.

- Koshtastha Vrana having discharges Mootra, Pureesha etc. and having discharges of Pooya and Rakta, Sarvotogatha.
- Vranas in alpa Maamsa person discharging Pooya, Rakta, associated with Arochaka, Avipaaka, Kaasa, Swaasa like Upadravas.
- Bhinna Vrana in Shira, Kapaala, followed by appearance of Mastulunga, features of all the 3 vitiated Doshas, with Kaasa & Shvaasa are incurable.

### Drugs Details

#### HONEY/MADHU; Madhu (Honey) (Bhavprakash)

Honey possessing gunas as explained in classical is considered for the analysis.

#### Madhu properties

1. RASA- MADHURA
2. UPARASA- KASHAYA
3. GUNA - RUKSHA
4. VIPAKA - MADHURA
5. PRABAVA-SUKSHMA MARGA ANUSARI (ability to permeate in microchannels) (Su.su 45/132) It is having yogavahi action i.e. synergistic to other medicines (Su.Su.45/142)

#### Madhu is tridoshara

Vatahara; The Madhura Rasa of the honey reduces the vitiated VataDosha, helps to relieve pain and enhanced healing.

Pittahara; Madhu pacifies PittaDosha by virtue of its Madhura Rasa and SheetaGuna.

Kaphahara; Kapha is taken care of with Kashaya Rasa and RukshaGuna, which accelerate healing.

"Vaatalam guru sheetam cha raktapittakaphapaham | Sandhatrucchedanamrukshamkashayammadhurammadhu ||"

"It has sweetness (madhura rasa) with added astringent as end taste (Kashayaana rasa). It is heavy (guru guna), dry (ruksha) and cold (sheeta). Its effect on doshas is as follows It mitigates the vata, scrapes kapha and normalizes pitta and rakta. It promotes healing process."

"ChakshushayamCheditritshleshmavishahidmaasrapittan ut | Mehakushtakrimicchardishwaasakaasaatisaarajit || Vranashodhanasandhaanaropanamvaatalammadhu ||" AshtangaHridaya

- Honey is very good for eyes and eyesight.
- It quenches thirst.
- Dissolves kapha.
- Reduces effects of poison.
- Stops hiccups.
- It is very useful in diabetes mellitus, skin disorders, worm infestations, bronchial asthma, cough, diarrhea and nausea, vomiting.
- Cleanse the wounds.
- It heals wounds.

- Helps in quick healing of deep wounds.
- Initiates growth of healthy granulation tissue.
- Honey helps in mitigation of all the viciated tridoshas.

#### Types of honey: according to sushruta samhitha

Eight types of honey are described in ayurveda depending on the type of bee which collects it. They are Pouttika, Bhramara, Kshoudra, Makshika, Chatra, Arghya, Oudalaka, Dala.

1. **Pouttika** - This honey is collected by very large bees from the nectar of poisonous flowers. It increases vata, causes gout and burning sensation in chest. It is also sedative and reduces fat.
2. **Bhramara** - This honey is collected by large bees and sticky in nature.
3. **Kshoudra** - (Honey collected by medium sized honeybees) light and cold in nature. Dissolves Kapha.
4. **Makshika** - (Honey collected by small honeybees) very light and dry natured. Useful in VataKapha diseases and kapha diseases.
5. **Chatra** - Heavy and cold in nature useful in gout, Leucoderma (Shwitra).
6. **Arghya** - Good for eyes but causes arthritis.
7. **Oudalaka** - Useful in skin diseases and helps in modulation of voice.
8. **Dala** - Dry and reduces vomiting.

Amongst all the above "Makshika" is considered as the best type with immense medicinal properties, Honey is a useful agent for debriding i.e. cleaning, contraction and healing of the wound.

**Composition of honey (modern parameter):** In percentage --Fructose 38%, Glucose 31% Sucrose 1% Water 17% Other sugars.

Contents -vitamin B6, vitamin C, thiamin, niacin, riboflavin, pantothenic acid, Minerals. calcium, copper, iron, magnesium, manganese, phosphorus, potassium, sodium, zinc 3 Amino acids 4 Antioxidants, catalase, pinocembrin, Honey has a density of about 1.4 kg/liter (40% denser than water).

#### SARPI [GHEE]

##### (Bhavprakash) acc to SNEHA PAKA VIDHI

The Milk of Cow is used for making curd and butter milk from it. The butter is isolated from butter milk by centrifugation. The isolated butter is given heat until it is converted into Ghee (phenodgama lakshanas). Ghrita preparation methods as explained by acharyas.

#### Gau sarpi (clarified butter)

In Ayurveda there is description of four types of 'Sneha' viz. Sarpi, Taila, Vasa, Majja. According to Samhitas-Sarpi is considered as superior among all due to its property of "Samskaranuvarti". It means that if it is processed with other drug, it accepts all qualities of that drug without changing its own. Also, among 6 types of



ghee, Gau Sarpi is described as superior due to its properties. (As. Hr. Su. 16/2,3).

#### Properties (cha. Su. 27/231,32)

- **RASA** - Madhur
- **Virya** - Sheeta
- **Vipak** - Madhura
- **Guna** - Mrudu, Shlakshna, Guru.
- **Doshghnata** - Vataghna & Pittaghna

Gosarpi-It is madhur in rasa, madhur in vipaka & sheetvirya. It alleviates vata, pitta & visha. (Su. Su. 45/97), Sarpi has Rakshoghna property (Su. Su. 45/66) Here Rakshoghna means antimicrobial.

Sarpi is obtained from the class Mammalian of the animal kingdom (jangama) especially cow, she-buffalo, goat, sheep, she-camel, and mare. So that in the Ayurvedic classics and tradition, if not specified, Sarpi always applies to Gau Sarpi (cowghee). Clarified milk fat or butter fat is known as Sarpi (ghee).

The composition of ghee (modern parameter): Moisture 14.4%, Fat 32.4%, Protein 36.0%, Lactose 12.0%, Ash 5.2%, Triglycerid, Diglycerides, Monoglycerides, Keto Acid, Glycerylestes, Free Fatty Acids, Phospholipids, Sterols, Vitamin A, Vitamin D, Vitamin E, Vitamin K

Fatty Acids - Butyric acid, Caproic acid Caprylic acid, Capric acid, Lauric acid, Myristic acid, Palmitic acid, Stearic acid, Arachidic acid, Oleic acid, Linoleic acid, Ghee contains beta-carotene and Vitamin E and both are known antioxidants.

#### MODE OF ACTION -According to modern parameters

##### Madhu [Honey]

Honey is produced by honeybees that collect nectar from flowers and concentrate the sugars until it is honey. Honey consists mainly of sugars, water and very small amounts of organic compounds and enzymes. the effect of honey on wound:

**Debridement:** Honey dressing keeps the wound moist and may help to remove sloughs, necrotic and gangrenous tissue painlessly from wound surface.

**Antimicrobial activity-** The enzyme glucose-oxidase and together with other compounds (protein, peptides and enzymes) responsible for antimicrobial activity/ Antibacterial.

**Hydrogen peroxide Activity:** When honey encounters the wound and mixes with wound fluids, the enzyme glucose-oxidase is activated. The enzyme glucose-oxidase is responsible for slow-release production of low concentrations of hydrogen peroxide. The concentration of peroxide is high enough to kill pathogenic bacteria, but does not harm the healing tissue.

**Low pH:** The activity of glucose-oxidase also causes production of gluconic acid. This acid is the major

organic acid in honey and regulates that acidic environment (low pH).

The slow release of hydrogen peroxide and low pH (acidic environment) at the wound site were responsible for the inhibition of microbial activity and provided early wound healing.

**Anti-oxidant and anti-inflammatory:** Honey stimulate angiogenesis, granulation and epithelialization by stimulating the growth of fibroblasts, and thus it helps skin regeneration. The enzyme catalase present in honey has an antioxidant property, it reduces inflammation and hastens subsidence of passive hyperemia. It also reduces edema and exudation, absorbing fluid from the wound.

**Direct nutrition effect:** It contains a wide range of amino acids, vitamins and trace elements in addition to large quantities of readily assimilable sugars, vitamin C which is typically more than three times higher than that in serum helps in collagen synthesis and regeneration of healthy tissue.

**Collagen synthesis:** Honey causes fibroblasts to act fast at wound site leads to rapid laying down of collagen fibers helps in improving keratinization of the surface wounds. Honey is known for increasing the thickness of basement membrane and epidermis and increases the thickness of collagen fibers.

**Oxygenation and collagen formation:** The high osmolarity of honey causes an outflow of lymph which serves to provide nutrition for regenerating tissue which otherwise can only grow around points of angiogenesis, the decreased turgor resulting from the application of honey may increase oxygenation of tissues.

**Analgesic:** It has been noted that honey dressings are easy to apply and remove. There is no adhesion to cause damage to the granulating surface of wounds, no complication can be expected while removing dressings, as it contains pro inflammatory mediators may help to reduce pain effectively.

##### SARPI [GHEE]

Ghee has not been considered as promising healing agent by modern science. But taking into consideration the references from Ayurveda, ghrita has been tested with honey,

The different ingredients present in the ghee have high role in the wound healing. For the same purpose ghee was first analyzed chemically. It has been observed that the ingredients serve the important functional aspects of healing.

**Anti-bacterial activity of Ghee:** Oleic acid, linoleic acid, lauric acid and capric acid are the major fatty acids found in the Ghee along with other fatty acids. Oleic acid has been found to have strong inhibitory action on

certain bacteria and viruses. It has been observed that linoleic acid can inhibit the growth of *Staphylococcus aureus* by altering its protein synthesis, cell wall, nucleic acids and cell membrane during division.

**Nutritional action:** The other constituents of ghee include Vitamins A, D, E and K. Quantitatively Vit. A is more abundant than others. These are related with proper growth and tissue regeneration. Vitamin A interferes with wound healing causing lysis of lysosomal membranes, stimulation of fibroblasts and collagen deposition. act as an anti-inflammatory agent. Its antioxidant properties suggest a protective function for growing cells against free oxygen radicals released by leukocytes.

**Action at cellular level:** The cell membrane is made up of lipid bi-layer. The lipophilic substances are better carried to the cells with lipid media. Here ghee acts as a vehicle for honey to reach to intracellular part. Ghee as mentioned in the literature contains 97% triglycerides i.e. fatty acids. Fatty acids belong to a class of compounds formed by a long hydrocarbon chain and a terminal carboxylic group. they act as precursors of intracellular messengers, and they are oxidized for producing ATP (adenosine triphosphate).

The various events of the inflammatory process, such as vascular contraction, chemotaxis, adhesion, diapedesis, activation and cell death, where the majority of these occur via arachidonic acids such as prostaglandins, leukotrienes, tromboxanes and lipoxin. Ghee provided medium for honey by its lipophilic nature to act at the cell level.

**Linoleic acid as a pro inflammatory agent and growth factor:** Linoleic acid is a powerful pro-inflammatory mediator that causes migration of granulocytes and macrophages as well as important changes in granulation tissue. Linoleic acid has also been shown to participate in cell proliferation and inflammatory process, where in the latter plays a role as a mediator of leukocyte function having chemotactic and stimulatory effects on neutrophils.

**Moist environment:** The moist wounds healed much faster than dry wounds, epithelialization is twice as rapid as on wounds allowed to dry by exposure to air. An open wound, which is directly exposed to air, will dehydrate and a scab or eschar is formed. This forms a mechanical barrier to migrating epidermal cells and is then forced to move in a deeper level of tissue, which prolongs the healing process. Moist healing prevents the formation of scab as the dressing absorbs wound exudate secreted from the ulcer, also help to accelerate the inflammatory response.

**Anti inflammatory:** Factors produced in the inflammatory process open up blood vessels, so serum flows out into the surrounding tissues. Where the skin is

broken the serum exudes from the wound and the quantity of exudate can be large enough to create practical difficulties in absorbing it. If honey is kept on the wound its anti-inflammatory activity soon suppresses the inflammation so that the quantity of exudate decreases.

**Antimicrobial and promote granulation tissue formation:** the main rationale for using antiseptics on open wounds is prevention and treatment of infection thereby increasing rate of the healing process. It is established that infections may delay healing, cause failure of healing, and even cause wound deterioration. Microbial pathogens delay wound healing through several different mechanisms, such as persistent production of inflammatory mediators, metabolic wastes, and toxins, and maintenance of the activated state of neutrophils, which produce cytolytic enzymes and free oxygen radicals. This prolonged inflammatory response contributes to host injury and delays healing.

Moreover, bacteria compete with host cells for nutrients and oxygen necessary for wound healing, the combination of Madhu Sarpi acts and address all these issues related with topical agents for wound healing. It alone can be used as an antimicrobial agent as well as healing promoting agent in cutaneous wounds.

## DISCUSSION

- Wound healing is a complex and dynamic process with the wound environment changing with the changing health status of the individual.
- The knowledge of the physiology of the normal wound healing trajectory through the phases of hemostasis, inflammation, granulation and maturation provides a framework for the understanding the approach.
- To establish these facts on the modern parameters a thorough study is need of the hour. And there is no reference of adverse effects, local or systemic toxicity and resistance of the drugs used for this study.
- In traumatic wounds local brajaka Pitta gets aggravated causes increase in local Ushma. Shopha and dhaha, also local Vata gets aggravated due to loss of dhatu (Dhatukshaya). It results in shoola. Being Sheeta virya Ghrita acts as Pittashmana, snigdha property acts as Vatashamaka. Thus, Ghrita being Pitta-Anilharam alleviates both Vata and Pitta, Also Ghrita by its Agnideepaka property (the property of improving catalysitic activity).
- The pus formation in the wound and septic manifestations of the wound are caused by Rakshas (microbes). The process of killing those Rakshas was coined as Rakshoghna. The Rakshoghna property of Ghrita thus can be correlated to the anti microbial activity of Ghrita.
- The kashaya rasa and katu vipaka help in Shodhana (debriding/ cleansing) of the wound.

- Sarpi causes improvement in local dhatwagni leads to rapid replacement of lost dhatu which in turn results in rapid healing called as Ropana (replacement of lost tissue).
- Varnya property of sarpi retains the natural skin color even after healing.
- The other important property described is Vishahara. Refers to the toxins liberated by infecting microorganisms at wound site are neutralized by the Vishahara action of Ghrita.
- The chedana property of Madhu is nothing but the separation of dead tissue from the surrounding healthy tissue, Madhu helps to decrease discharge by its Ruksha guna. Also, after proper Shodhana of the wound, it helps in healing and bringing together the cut edges by its Sandhana property.
- Madhu also possesses the property of Agnideepana, which works in the same way as that of Ghrita i.e acts on local Dhatwagni. The Varnya property contributes in healing by preserving the natural skin color i.e. Savarnikaranam.
- The penetration of the drug deep into the tissue and at cellular level is achieved by Sukshma Marga Anusari property of Madhu.
- The pittashamaka property, Madhura rasa and Madhura vipaka of Ghrita is useful for healing and new tissue formation.
- Ghrita helps in Ropana by formation of new tissue, Madhu helps for shodana by its Kashaya and katu rasa.
- When sneha guna combined with sukshma anusari property, the penetrating power increases and drug gives better results. This explains the Kshato ushmano nigraha action of the combination based on Ayurvedic Principles.
- The work of modern science was initially directed to the antimicrobial activity only. Not much attention was given to the other aspects of wound healing like rapidity, scar formation and less discoloration. In last few decades the view has changed. The agents which enhance healing of wound are being searched. Also, the agents which offer better quality healing are being searched.
- Now here is an attempt to gather and understand all references from Samhita for further clinical study of drug on wound.

## CONCLUSION

- The references of madhu and sarpi stating significant cleansing(shodana) and healing effect (ropana) of the drug on patients with sadyovrana.
- The combination have direct reference of tridosahara property, rakshogna, varnya, vishahara, sandhanakara, ropaka, shodaka and sukshmamarga anusari property. Which is very ideal qualities of drug to treat vranas.
- The combination of drug possesses anti-microbial, anti-inflammatory, analgesic, antioxidant and nutritive effect & can be used as topical application,

as they contain several important properties that make it ideal as a dressing agent for wounds.

- Both the ingredients are easily available in India, being the part of every Indian kitchen. They are cost effective compared to the various products used today for rapid and quality healing of the wound with no resistance reference till date.
- The combination can be effective as they contain – Pro-inflammatory mediators, moist environment with low PH, Nutrients for wound healing along with deodorizing effect.
- Ghee thought to provides medium for honey by its lipophilic nature to act at the cellular level providing needed nutrients, enzymes and appropriate environment for wound healing.
- As we know infection delay healing by producing inflammatory mediators, metabolic waste and toxins leading to prolonged inflammatory response and host injury, as microbes compete for nutrition and oxygen, hence the combination thought to work wonder in addressing it by creating antagonistic environment.
- Antibiotics are considered as potent antimicrobial agents with high specificity. With the invention of Penicillin by Alexander Fleming eighty years ago, it was considered that there will be no threat of infection in future. But with the development of resistance to penicillin, many generations of antibiotics have failed to provide long lasting antimicrobial effect. The organism kept adapting to the new antimicrobial and evolves as multi-resistant strains.
- The relentless emergence of antibiotic-resistant strains of pathogens, together with the retarded discovery of novel antibiotics has led to the need to find alternative treatments.
- Now the scenario is changing and the whole world is looking towards the science-based Evidence based ayurvedic medicine for the management of infection. These are time tested and effective remedies being in use since thousands of years. In this age of research it's the time to explore them.

## REFERENCE

1. AstangaHridaya with Sarvangasundara by Arunadatta and AyurvedaRasayana by Hemadri (H. S. Paradkar) VI Edi, Chaukhambha.
2. AstangaSamgraha (AD Athavale), AtreyaPrakasanaPune, 1980 with commentary by Indu.
3. Bhavaprakash Nighantu - By AcharyaBhavaMishra with Hindi commentary by K. Chuneekar 7th Edi., Chaukhambha, AmaraBharati Academy, Varanasi, 1986.
4. CarakSamhita- with AyurvedaDipika commentary by CakrapaniDatta ChaukhambhaOrientalia, Varanasi, 1989.
5. SushrutaSamhita: with NibandhaSamgraha Commentary by Dalhana and the NyayaCandrakaPanjika of Sri Gaya Dasacarya on



- NidanaSthana, ChaukhambhaOrientalia, Varanasi, 1986.
6. SusrutaSamhita: AyurvedaRasayanaDipika, Hindi Commentary by B.G. Ghanekar. Sutra, Nidana, New Delhi, 1986.
  7. Baly and Love's Short Practice of surgery, 25th Edition Textbook of Surgery, S. Das, Textbook of surgery, S. Das, 5th edition.
  8. Subramanyam.M topical application of honey and ghee in burn wound management-an overview, Ann burns fire disaster, 2007; 20: 137-140. {PUBMED}
  9. Gottrup F, Apelqvist J (2010) the challenge of using honey in randomized trials in wound healing B.J.S 97/303-304. {PUBMED}
  10. Balasubramanya S.P weiner M, Alshameeri Z, et al, standards of reporting of randomized control trails in general surgery. Can we do better with traditional approach? Ann surg, 2006; 244: 663-667.
  11. Bell SG. The therapeutic use of honey. Neonatal, 2007; 26: 247-251. [ PUBMED]
  12. Zumla A, Lulat A. Honey--a remedy rediscovered. J R Soc Med., 1989; 82(7): 384.
  13. Molan PC. The role of honey in the management of wounds. J Wound Care, 1999; 8: 415.
  14. Bergman A, Yanai J, Weiss J, Bell D, David MP. Acceleration of wound healing by topical application of honey. An animal model. Am J Surg, 1983; 145: 374-376.
  15. Nutrition Data. "Nutritional Summary for Honey." Last accessed April 14, 2007. <http://www.nutritiondata.com/facts>
  16. Journal of molecular medicine and advance sciences, 2006; 2(2): 231-35, Med well online 2006
  17. Effect of a combination of medium chain triglycerides, linoleic Acid soy lecithin and vitamins A and E on wound healing in rats Maria Sonia Felício Magalhães; Francisco Vagnaldo Fachine; Rafael Nogueira de Macedo; Diego Levi Silveira Monteiro; Cecília Carvalho Oliveira; Gerly Anne de Castro Brito; Federal University of Ceará (UFC), Brazil published on world wide web.