



FORMULAE USED FOR BURN WOUND DRESSING IN THE ERA OF ANCIENT INDIAN CIVILIZATION: A SEARCH FOR AN ALTERNATIVE LOCAL APPLICATION

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ABSTRACT

Burn injury is one of the common injuries incurred to man. It can be a simple superficial burn healing spontaneously or severe life threatening injury. With the advancement of science and technology survival rate of burn injury patient has increased. But management of the wound site is still a challenging task. The Indian system of medicine, Ayurveda, has a rich tradition of surgical knowledge. Indian classics like Sushrut Samhita, Bhavaprakash, Yogaratnakar, Harit Samhita etc. discuss burn wound treatment. The present study attempts to summarize the drugs used for burn wound dressing advised in Ayurvedic texts so that attempts can be made to revalidate and re-establish their efficacy in

present era.

KEYWORDS: Burn wounds, local applications, Ayurveda, herbo-mineral, natural dressing material.

INTRODUCTION

Wound dressing with local application is one of the methods of treatment of burn wound other than grafting. While grafting is a costly procedure needing special set up with skilled manpower, dressing is an important part of burn wound management. Though lots of products are available for burn wound dressing, an ideal dressing material is still desirable as the burn wound healing is a complex mechanism with suppressed host immunity increasing

chances of various infections. Management of the wound site is still a challenging task for even the most experienced surgeon while discoloration, contracture etc. are another aspect of problems of burn injury management. Antimicrobial resistance is one rising problem of modern days. Hence an alternative dressing material for burn wound has multiple benefits for the society. Shalyatantra is one of the specialized branches of Ayurveda, the time tested system of healthcare from ancient Indian civilization. Shalyatantra being a surgical classic, has detailed information regarding diagnosis and management of different types of wounds. Classification, clinical features and management of burn wound (*dagdha vrana*) are found in Ayurvedic classics including Sushrut Samhita in details. Along with *vrihat trayee* (major ayurvedic treatises i.e. Charak Samhita, Sushrut Samhita, Astanga Samgrah and Astanga Hriday) and *laghu trayee* (minor ayurvedic treatises i.e. Bhavaprakash, Madhav Nidan and Sharangdhar Samhita) other treatises like Yogaratnakar, Harit Samhita etc. also discuss burn wound treatment. In this study an attempt has been made to analyze different herbal and herbo-mineral compounds used for burn wound management in Ayurvedic treatises.

Burn Wound in Ayurveda

Burn wound is divided into four types in Ayurvedic classic Sushrut Samhita with detailed diagnostic features. It can be summarized as given below

Plusta- First degree

Durdagdha- Superficial second degree

Samyagdagdha- Deep second degree and

Atidagdha- Third degree.

Detailed description of treatment is also mentioned according to type of burn in Sushrut Samhita.

Preparations Mentioned in Ayurveda for Burn Wound for Local Application

A. According to degree of burn

1. *Tugaksheeradi lepa*: Sushruta Samhita^[1] mentions this preparation for *Samyagdagdha vrana* (deep second degree burn wound) while Sharangadhara Samhita^[2] advises it for all kinds of *dagdhavrana* (burn wound).

Ingredients:

1. Tugaksheeri ((a translucent whitish substance deposited inside nodal joints of the female *Bambousa arundinacae* plants)),
2. Plaksha (*Ficus lacor*),

3. Chandan (*Pterocarpus santalinus*),
4. Gairik (Red Ochre),
5. Guduchi (*Tinospora cordifolia*), and
6. Ghee.

2. local applications for samyagdagdha vrana:^[1]

1. *Shalitanulkanva* (powder of dried fruit of *Oryza sativa* Linn) with *Ghrita*;
2. *Tindukitvak* (bark of *Diospyros peregrina* (Gaertn.)), *Kapal* (powder of earthen vessel) and *ghee*.

3. Local application for *Isaddagdha* (superficial burn)^[3]

Local application of some or all of the following: *Nimbi patra* (leaves of *Azadirachta indica*), *Tulasi* leaves, (*Ocimum santum*), *Kustha* (*Saussurea lappa*), *Dhatri phala* (*emblica officinalis*).

4. Local application for *Madhya dagdha* (second degree burn)^[3]:

- a. Local application of *Payasya* (*Impomoea paniculata*)
- b. Local application of ghee processed with *Madhu*(honey), *Kustha* (*Saussurea lappa*) and *Manjistha* (*Rubia cordifolia*).
- c. Local application of paste of the following with milk: *Kustha* (*Saussurea lappa*), *Yasthimadhu* (*Glycyrrhiza glabra* Linn), *Chandan* (*Santalum album* Linn) and *Eranda patra* (leaves of *Ricinus communis*).

B. Common dressing material for all type burn wounds

The following medicines are prescribed for burn wound.

1. Local application containing^[4,5]

Beeswax, *Madhuka* (*Glycyrrhiza glabra* Linn), *Rodhra* (*Symplocos racemosa* Roxb), *Sarjarasa* (the oleoresin of the *Shorea robusta* Gaertn), *Manjistha* (*Rubia cordifolia*), *Chandan* (*Santalum album* Linn), *Murva* (*marsdenia tenacissima*) and *Ghee*.

2. *Jatyadi taila*^[6,7]

Tila (*Sesamum indicum*) oil processed with *kalka* (paste) of leaves of *Jati* (*Myristica fragrans*), *Nimba* (*Azadirachta indica*), *Patola* (*Trichosanthes dioica*), *Naktamal* (*Pongamia Glabra*), *Beeswax*, *Madhuka* (*Glycyrrhiza glabra* Linn), *Kustha* (*Saussurea lappa*), *Haridra* (*Curcuma longa*), *Daruharidra* (*Berberis aristata*), *Katurohini* (*Picrorhiza kurroa*), *Manjistha* (*Rubia cordifolia*), *Padmak* (*Prunus puddum*), *Pathya* (*Terminalia chebula*), *Lodhra*

(*Symplocos racemosa*), Nilkamal (*Nymphaea stellata*), Sariba (*Hemidesmus indicus*), Tuthak (Copper sulphate) and fruit of Naktamala (*Pongamia pinnata*).

3. Local application^[5] of Pathya (*Terminalia chebula*), Kardam (soil), Jiraka (*Cuminum Cyminum*), powder, Beeswax, Sarjarasa (The oleoresin of the *Shorea robusta* Gaertn) and Ghrita.^[27]

4. Local application^[5] of Kutherak (*sweta* Tulsi) (*ocimum basilicum*) powder prepared by *antardhumak* process, mixed with honey or water.^[5]

5. Powder of dried Aswattha (*ficus religiosa*) bark.^[5]

6. Oil (Til oil prepared by *tailapak* process) processed with earthworm.^[5]

7. *Dagdhayavabhasma* (*Hordeum vulgare* Linn. ash) powder, mixed with Til oil.^[5]

8. *Katu taila* (oil obtained from the matured seeds of *Brassica nigra* or *Brassica juncea*) processed with *kalka* and *kashay* of Patola (*Trichosanthes dioica*).^{[5][8]}

9. *Kalka* (paste) of Chandan (*Santalum album* Linn), Vatasringa (*Ficus benghalensis* Linn), Manjistha (*Rubia cordifolia*), Madhuka (*Glycyrrhiza glabra* Linn) Prapoundarik (*Nelumbo nucifera* Gaertn.), Durva (*Cynodon dactylon*), Patanga (*Caesalpinia sappan* L.) Dhataki (*Woodfordia fruticosa*); processed with Til oil and cow's milk.^[5]

10. Local application of Langali (*Gloriosa superba*), Haridra (*Curcuma longa*), Daruharidra (*Berberis aristata*), Manjistha (*Rubia cordifolia*), Madhuka (*Glycyrrhiza glabra* Linn), Lodhra (*Symplocos racemosa* Roxb), Katphala (*Myrica esculenta* Buch), Kampillak (*Mallotus philippensis*), Meda (*Polygonatum verticillatum* (L.) All.), Mahameda (*Polygonatum cirrhifolium* (Wall.) Royle), Pippali (*Piper longum*), Triphala, Nimba patra (leaves of *Azadirachta indica*) mixed with ghee and cow's milk and Beeswax.^[5]

11. Local application of Dhataki (*Woodfordia fruticosa*) flower powder mixed with Atasi (*Linum usitatissimum*) oil.^[5]

12. Triphala (*Emblica officinalis*, *Terminalia bellirica* and *Terminalia chebula*) powder prepared by *Antardhumadagda* (one of the Ayurvedic procedures of powder preparation), mixed with Atasi (*Linum usitatissimum*) oil.^[5]

13. Local applications which are useful in *Pittavidradhi* and *visarpa*.^[5]

14. *Shalitanduladi ghrita lepa*: Application of Shalitandul *kanva*, Tinduki *tvaka*, *Ghee*.^[9]

15. Ghee processed with Sikthaka (beeswax), Kardama (soil), Jirak (*Cuminum Cyminum*), honey and Pathya (*Terminalia chebula*).^[10]

16. Application of ghee, camphor (*Cinnamomum camphora*), Gairik (Red Ochre), Lodhra (*Symplocos racemosa* Roxb).^[11]

17. Application of Amlaki (*Emblica officinalis*), Tila (*Sesamum indicum*), Kustha (*Saussurea lappa*).^[11]

18. Application of Mixture of Paste of Lodhra (*Symplocos racemosa*), Ushir (*Vetiveria zizanioides* (L.) Nash), Manjistha (*Rubia cordifolia*), mixed with cold water.^[11]

19. Application of Oil extracted from Atasi (*Linum usitatissimum*), Mulethi (*Glycyrrhiza glabra* Linn), Ghrita.^[11]

DISCUSSION

It is observed that lots of different medicines for local application in burn wound are mentioned in Ayurveda in different combinations of ingredients. Tugaksheeri, Plaksha, Chandan, Gairik, Guduchi, *Shalitanulkanva*, *Tindukitvak*, Nimbi *patra*, Tulasi *patra*, Kustha, Dhatri *phala*, Payasya, Kustha, Manjistha, Yasthimadhu, Eranda *patra*, Beeswax, Rodhra, Sarjarasa, Murva, Beeswax, Rodhra, Sarjarasa, Murva, ghee, honey and milk are the drugs used in different preparations. These drugs have individual medicinal properties and different actions when used in combinations as well.

The drugs contain phytochemicals as well as minerals and other natural components like ghee, honey etc. In various studies phytochemicals are found to exert positive actions at different stages of burn wound healing process by various mechanisms like antimicrobial, anti-inflammatory, antioxidant, stimulation of collagen synthesis and epidermal growth factor, cell proliferative and angiogenic effects. Again poly herbal formulations are better compared to pure isolated chemical alone because polyherbals contain various phytoconstituents that possess anti-inflammatory, antioxidant, antimicrobial properties and show synergistic effect on wound healing process. Hence polyherbals show better safety, efficacy and paucity of adverse reaction. Substances like ghee, honey, beeswax, tugaksheeri etc. have different physico-chemical properties useful for preparation of local application for wound healing. If we see the Ayurvedic properties of the drugs, most of them are of *madhur*, *tikta* and *kasaya rasa*, and other Ayurvedic properties which helps in wound healing by various actions according to Ayurvedic principles.

CONCLUSION

It can be concluded that Ayurveda has immense potential which is yet to be utilized. The drugs used for burn wound in Ayurveda should be subjected extensive research so that these can be used in present era for the benefits of mankind.

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