



## AYURVEDA TOXICOLOGICAL APPROACH TO THE MANAGEMENT OF CHRONIC WOUNDS

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## ABSTRACT

An increasing number of chronic wounds has become a great concern in society. Complications of wounds such as infection, eczema, gangrene, and sometimes amputation make the quality of the life of the person pathetic. So, the management of chronic wounds become a great challenge for health workers. Management of chronic wounds is described in the *Salyathantra* part of Ayurveda where a detailed description of wounds can be seen. *Agadathantra* or Ayurveda toxicology which is another branch of Ayurveda is dealing with animate poisons, inanimate poisons, and artificial poisons, their symptoms, and management. While going through the literature of Ayurveda we can see several single drugs and formulations which are antitoxic used in the treatment of chronic ulcers. *Vishopayogiya* is a unique concept put forward by Ayurveda Toxicology in severe toxic conditions. Many toxic drugs are included in the management of ulcers such as *langali*, arsenic, orpiment, etc. These are also useful when microbes and maggots are present in the wound. So, both these toxicological approaches will be helpful for a better management in the case of chronic ulcers.

**Keywords:** Ayurveda Toxicology, *Vishopayogiya*, Antitoxic drugs, Chronic wound

## INTRODUCTION

A chronic wound is one which has failed to progress through the normal reparative process of wound healing in a timely and orderly manner within three months and failed to attain the normal anatomical and functional integrity. Based on the causative aetiologies the Wound Healing Society has classified chronic wounds into four categories such as pressure ulcers, diabetic ulcers, venous ulcers, and arterial insufficiency ulcers. Along with the increase in the aging population comorbid conditions including chronic wounds are also increasing. It is estimated that 1 to 2 % of the population will suffer from a chronic wound once in their lifetime, especially in developing countries.<sup>1</sup> Complication of chronic wounds includes infection, eczema, gangrene, and amputations. This affects a person's quality of life and his income-generating capacity. Moreover, the management of chronic wounds becomes a major financial burden among health care systems<sup>2</sup>. Chronic wounds usually last an average of 12 to 13 months, recur in up to 60% to 70 % of patients.<sup>1</sup>

In Ayurveda, we can see descriptions of acute and chronic infected wounds. Ayurveda, the science of life has eight branches such as *Kaya chikitsa*, *Bala chikitsa*, *Graha chikitsa*, *Urdwanga chikitsa*, *Salya chikitsa*, *Damshtra chikitsa*, *Jara chikitsa*, and *Rasayana Vajeekarana chikitsa*<sup>3</sup>. Among this treatment of *vrana* or ulcers are included under *Salya chikitsa*. *Vrana chikitsa* is described in various classics of Ayurveda. Susruta Samhitha has given more importance to surgical diseases. The very first two chapters of Chikitsa sthana are about the treatment of ulcers. Ashtanga Hrudaya Utharasthana 41 st chapter, Astanga Sangraha Chikitsa 31 st chapter and Charaka Samhitha Chikitsa 25th chapter also give a detailed picture of ulcers. Acharya Susruta explains in detail the examination of ulcers, and also the characteristics of sites, shape, smell, and discharge of ulcers. He explains *shashtiupakramas* or 60 treatment modalities for ulcers<sup>4</sup>. This paper is an attempt to explore the relevance of Agadatantra principles in the management of chronic ulcers.

## LITERATURE REVIEW

*Agadatantra* is a branch of Ayurveda in which various types of poisonous minerals, plants and creatures, diseases produced by them, and their treatment are detailed<sup>5</sup>. It is explained in Ashtanga Hrudaya after *Salya thantra* as there is a similarity in the causality<sup>6</sup>. In Ayurveda, toxicology poisons are mainly classified into animate, inanimate, and artificial<sup>7</sup>. Different types of poisonous snakes, spiders, scorpions, and other insects their features, and symptoms produced by these creatures are included under animate poisons. Inanimate poisons include poisonous plants and minerals. Poisons produced by mixing substances that may be either poisonous or non-poisonous are included under artificial poison. If someone is affected by any of these three types of poison and if it is not properly treated it may produce symptoms in the future. This is termed *dooshivisha*.<sup>7</sup> Treatment of all the three types of poisons is explained in detail in various classics.

Ayurveda classifies ulcers into mainly two types. Ulcers due to external causes such as blowing, falling, injury with fangs, teeth, nails, etc. Another type of ulcer is those that are produced due to the vitiation of dosha and raktha. This type of ulcer is further subdivided into fifteen subtypes according to the predominance of *vatha*, *pitha*, *kapha*, and *rakta*<sup>8</sup>. All varieties of the ulcer will turn into *dushta vrana* if they are not properly treated. Vagbhata describes seven treatment modalities for the treatment of chronically infected wounds such as *Prakshalana*, *Lepa*, *Ghrutha*, *Thaila*, *Rasakriya*, *Choorna*, *Varti*.<sup>9</sup> In procedures like *kshalana* (washing of wounds) several antitoxic drugs are included. Some of the antitoxic drugs used in various procedures are given in table No1.

*Vishopayogiya* is another unique concept of Ayurveda toxicology. *Vishopayogiya* is the administration of *visha* for therapeutic purposes. Here it is explained that an inanimate poison can be utilized to cure an animate poison and vice versa.<sup>10</sup> Acharya Charaka states that animate poisons are predominantly made up of *vayu* and *akasa bhuthas* and these act upwards. Inanimate poisons are made up of *prithi* and *jala bhutas* and act

downwards. Thus act one against the other<sup>11</sup>. The use of poison is also recommended when the severity of the disease is very high or when it is nonresponsive to conventional treatment. Several formulations that contain toxic drugs, explained in Kerala traditional toxicology texts like *Visha Vaidya Jyotsnika* and *Prayoga Samuchayam* are useful in the management of ulcers also. When we search the Ayurveda literature on the treatment of ulcers, we can see that many toxic drugs are included in the treatment. Toxic drugs used in the treatment of ulcers and the procedures mentioned are given in the table No.2

Many formulations that contain toxic drugs are also used in the treatment of chronic wounds by different Acharya. They are listed in the table No. 3

There are some traditional formulations with toxic ingredients that are found effective in the treatment of ulcers due to varying etiology. They are mentioned in table No.4

### **Theoretical foundation and hypothesis development**

#### **Normal stages of wound healing-**

There are four overlapping stages of healing in a wound such as hemostasis, inflammation, proliferation, and remodeling phases. If an injury occurs immediately vasoconstriction and blood clotting happens. Blood clotting prevents blood loss. Platelets secrete growth factors and cytokines attract fibroblasts, endothelial cells, and immune cells. Neutrophils and macrophages are the major cells involved at this stage. Neutrophils release reactive oxygen species and proteases which prevent infection. Followed by the proliferation phase begins. This is characterized by tissue granulation, epithelialization, and angiogenesis. All these usually happen within seven days. The remodeling phase occurs only after the wound has closed and usually, this phase lasts for one to two years. Organized collagen bundles are formed during this phase.<sup>12</sup>

#### **Pathophysiology of chronic wounds**

Whatever may be the cause of chronic wounds, they have some common features such as excessive levels of pro-inflammatory cytokines and proteases, high levels of reactive oxygen species, senescent cells,

persistent infection, and deficiency of functional stem cells. Due to repeated tissue injury, the pro-inflammatory cytokine cascade lasts for a prolonged period leading to elevated levels of proteases. A high level of proteases destructs extracellular matrices. This prevents the proliferative phase and attracts more inflammatory cells. Prolonged inflammation and the hypoxic situation lead to high levels of reactive oxygen species and cell damage.<sup>12</sup> Application of strong antioxidants reduces Reactive Oxygen Species (ROS) to normal levels. A study in the National Library of Medicine, published by the National Institute of Health related to medicinal plants in chronic diseases<sup>13</sup>. Some of them are antitoxic and are useful in the treatment of chronic wounds.

Ulcers due to poisons- This type of ulcer is very common in snake bite cases, especially in viper bites. The chance of recurrence is also high. *Vishaghna chikitsa* is one of the sixty treatment modalities as explained by Acharya Susruta. It is especially useful in conditions where ulcers are produced because of poisoning. *Sodhana* and *samana chikitsa* are to be adopted here. It is advised that drugs for *sodhana* and *lepana, kshalana, etc. should be* antitoxic drugs<sup>14</sup>

### **DISCUSSION**

Thus, while we go through the Ayurveda literature, we can see several formulations which can be used for different procedures mentioned. Some of the formulations contain antitoxic drugs and some contain toxic drugs. The antitoxic action of a drug can be explained only through properties like anti-inflammatory, antioxidant, anti-irritant, anti-allergic, anti-tumorous, and wound healing properties. Several studies have proven that many antitoxic drugs possess these properties, and this is attributed to several phytochemicals contained in them. Antitoxic drugs help to maintain a normal physiological atmosphere that helps in the process of wound healing. On the other hand, toxic drugs help to destroy the microorganisms and maggots in chronically infected wounds. Acharya Charaka while explaining the treatment principle of *krumi* suggests *prakruthi vighatha* as a treatment methodology along with

apakarshana (removal of maggots and worms from the wound) and *nidana parithyaga* (abstaining from consumables and activities that aggravate the disease)<sup>15</sup>. *Prakruthi vighatha* is explained as the application of drugs that destruct the atmosphere that favor the growth of microorganisms and maggots. Thus, a

rationalized use of toxic and antitoxic drugs is helpful in the management of chronic wounds. Toxic drugs are to be used until the wound become *Sudha* or a healing wound. After that drugs which are antitoxic and healing in nature are advised.

Figure 1:

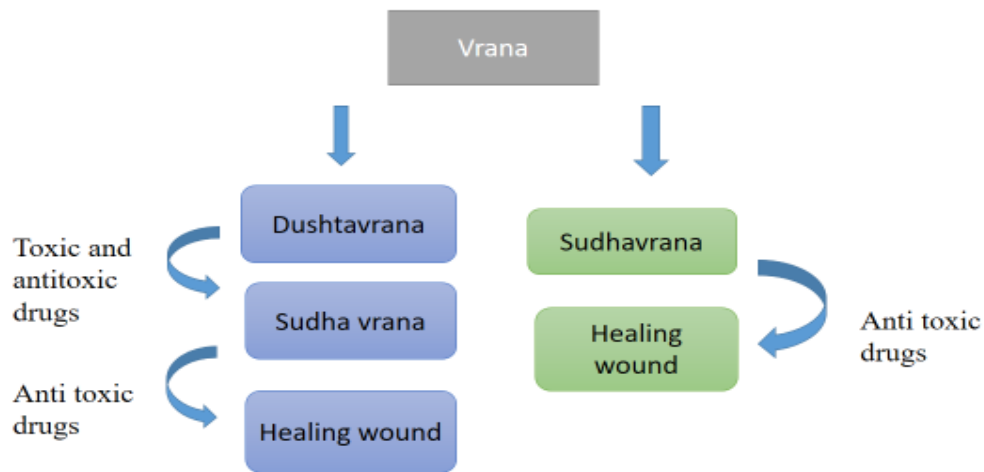


Table 1: Antitoxic drugs used in the treatment of ulcers<sup>15</sup>

SL No.	Antitoxic drugs	Scientific name	Procedure & Reference
1	Patola	Trichosanthes dioica Roxb.	Kshalana (A H U 25/42)
2	Nimba	Azadirachta indica A. Juss	Kshalana (AH U 25/42)
3	Trivrut	Operculina turpethum Linn.	Lepana, Varthi (AH U 25/42, 44)
4	Haridra	Curcuma longa Linn	Lepana (AH U 25/42)
5	Daruharidra	Berberis aristata DC	Lepana (AH U 25/42)
6	Kushtam	Saussurea lappa Decne.	Upanaham (AH U 25/35)
7	Yashti	Glycyrrhiza glabra Linn	Lepana (AH U 25/43)
8	Lodhram	Symplocos racemosa Roxb.	Lepana (AH U 25/53)
9	Manjishta	Rubia cordifolia Linn.	Lepana (AH U 25/60)

Table 2: Toxic drugs used in the treatment of ulcers<sup>9</sup>

Serial No.	Toxic drugs	Scientific name	Procedure
1	Langali	Gloriosa superba Linn	Not mentioned
2	Thutha	CuSO <sub>4</sub>	Avachurnanam
3	Harithala	As <sub>2</sub> S <sub>3</sub>	Lepanam
4	Anjana	Kohl stone	Lepanam
5	Agni	Plumbago rosea L.	Not mentioned
6	Manohwa	As <sub>2</sub> S <sub>2</sub>	Lepana

**Table 3:** Formulations that contain toxic drugs used in the treatment of ulcers<sup>9</sup>.

Serial No.	Formulation	Toxic ingredient	Scientific name
1	<i>Jathyadi ghritham</i>	<i>Thutha</i>	CuSO <sub>4</sub>
2	<i>Surasadi ganam</i>	<i>Vishamushti</i>	Strychnos nux-vomica Linn.
3	<i>Aragwadadi ganam</i>	<i>Agni</i>	Plumbago rosea L.

**Table 4:** Traditional formulations containing toxic ingredients useful in the treatment of ulcers

Serial No.	Formulation	Procedure	Reference
1	<i>Jeevarakshagulika</i> <sup>16</sup>	<i>Panam</i>	PS 5/113p
2	<i>Paranthyadi thaila</i> <sup>17</sup>	<i>Lepanam</i>	VVJ 6/37p
3	<i>Pavithra vatakam</i> <sup>18</sup>	<i>Panam&amp;Lepam</i>	VVJ 15/88
4	<i>Rasadi vatakam</i> <sup>19</sup>	<i>Jambala beejam</i>	VVJ 15/89
5	<i>Tharuna bhaskaram gulika</i> <sup>20</sup>	<i>Panam</i>	VVJ 15/89

PS- Prayoga Samuchayam, VVJ- VishaVidya Jyotsnika

## CONCLUSION

From a detailed review of literature of Ayurveda toxicology, it can be concluded that a toxicological approach will be helpful for a better management of chronic ulcers. Appropriate use of antitoxic drugs help to maintain a normal physiological atmosphere that helps in the process of wound healing. On the other hand, a rational use of toxic drugs help to destroy the microorganisms and maggots in chronically infected wounds. Exploring Ayurveda *Agadathantra* principles in the management of chronic wounds can make lives better.

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## REFERENCES

1. Krister Jarbrink et al, Prevalence and incidence of chronic wounds and related complications, a protocol for a systematic review. BMC, 8th September 2016
2. Robert Nunan, Keith G Harding and Paul Martin, Clinical challenges of chronic wounds, searching for an optimal animal model to recapitulate their complexity, The company of biologists, 2014
3. Susrutha, Susrutha Samhitha, Nibandha sangraha, Dalhana Chaukambha Sanskrit Sansthan, Reprint 2017 page2
4. Susrutha, Susrutha Samhitha, Nibandha sangraha, Dalhana Chaukambha Sanskrit Sansthan, Reprint 2017 page396
5. Susrutha, Susrutha Samhitha, Nibandha sangraha, Dalhana Chaukambha Sanskrit Sansthan, Reprint 2017 page2
6. Vagbhata, Ashtanga Hrudaya, Aruna Datha, Sarvanga Sundara, Choukamba Surbharati Prakashan, print 2018, page6
7. Vagbhata, Ashtanga Hrudaya, Aruna Datha, Sarvanga Sundara, Choukamba Surbharati Prakashan, print 2018, page918
8. Susrutha, Susrutha Samhitha, Nibandha sangraha, Dalhana Chaukambha Sanskrit Sansthan, Reprint 2017 page397
9. Vagbhata, Ashtanga Hrudaya, Aruna Datha, Sarvanga Sundara, Choukamba Surbharati Prakashan, print 2018, page868
10. Vridha vagbhata, Ashtanga Samgraha, Indu, Sasilekha, Choukamba Sanskrit Series Office, Varanasi, 2019, page904
11. Agnivesha, Charaka Samhitha, revised by Charaka and Dridhabala, Chakrapani, Ayurveda Deepika, Choukamba Publications, Varanasi, 2017, page149
12. Robert G Frykberg and Jaminelli Banks, Challenges in the treatment of chronic wounds, Advances in wound care Volume 4, Number 9, page560

13. Bharat B Agarwal et al, Identification of novel anti-inflammatory agents from Ayurvedic medicine for prevention of chronic diseases, 2011 1 st October 1595-1653
14. Susrutha, Susrutha Samhitha, Nibandha sangraha, Dalhana, Chaukambha Sanskrit Sansthan, Reprint 2017 page594
15. Agnivesha, Charaka Samhitha, revised by charaka and Dridhabala, Chakrapani, Ayurveda Deepika, Choukamba Publications, Varanasi, 2017, page258
16. Kochunni Thampuran, Prayoga Samuchayam, The Sriramavilasam Press and Book Depot, Kollam,1970, page 129
17. Ibid page130
18. Ibid page131
19. Ibid page132
20. Ibid page133

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