



## Wound Antiseptic Plants: An Overview of the Most Important Medicinal Plants in Iran Affecting Wound Infections

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**Abstract:** Surgical site infection refers to infection in surgical site which is created within 30 days after surgery. Infection may occur by bacteria, viruses, protozoa, fungi and worms. In traditional Iranian medicine, many plants are used to control and treat infections. Therefore, the present paper aims to recognize and introduce antiseptic medicinal herbs by which we can produce effective natural remedies for infection control. Medicinal herbs such as chamomile, flax, veneris, oleander, savory, mallow, castor, sage, garlic, harmala etc. are the most important medicinal plants for disinfecting wounds in Iran.

**Keywords:** *wound, infection, herbs, Iran*

### Introduction

Surgical site infection refers to infection which is created within 30 days after surgery [1]. Infection may occur by bacteria, viruses, protozoa, fungi and worms. Despite adherence to aseptic techniques and use of topical antimicrobial drugs, the burn wound is an excellent environment for the growth and proliferation of bacteria [2]. Surgical wound infection is the second most common cause of nosocomial infections in hospitalized patients [3]. Statistics reports indicate that 19 % of cesarean delivery cases are associated with infection [4].

Wounds are classified based on the severity of infection during surgery which is a universally accepted standard nowadays [5] including clean wound which are non-infectious with no inflammation, clean but infected wounds, infected wounds which are open wounds, fresh or caused by accident, dirty and infected wounds which are old wounds made by stroke along with dead tissues or pierced organs [5]. The risk factors

for surgical site infection include underlying disease, duration of surgery, wound classification, immunosuppression, smoking, infection in another part of the body, wound infection, aging, cancer and malnutrition [6]. The main causes of the high incidence of nosocomial infections in particular wound infections in Iran are low health hospital environment, poor infection control system, high patient density and inadequate health services [7,8].

The susceptibilities of different strains of bacteria are very diverse and infectious agents have become resistant to most antibiotics. In this regards a lot of researches have been done to out new ways to control infections [9-11]. Since the resistance to bacteria is increasing [12,13], it seems necessary to search for medicinal plants and their healing properties. Use of medicinal plants for the treatment of diseases is as old as human history [14]. It is estimated that at least one third of all pharmaceutical products has herbal sources

and/or are deformed after extraction of plant [15]. One of the most important health challenges is dealing with disease factors due to its high prevalence and spreading. The indiscriminate use of antibiotics has resulted in the development of drug resistance in majority of bacteria [16]. Accordingly, it seems essential to find new natural antimicrobial compounds with fewer side effects. In this regards, a lot of researches have been done, not only for infectious diseases, but also for other conditions [17-25] are used to control and treat infections and wounds [26-27]. Therefore, the present paper aims to recognize and introduce antiseptic medicinal herbs by

which we could produce effective natural remedies for infection control.

## Methods

The present paper searched the keywords such as wound infection, infection, scarring, and ethnobotanical medicinal plants. Searching articles and information was conducted from domestic and foreign databases such as Scopus, ISC, Magiran and several other databases.

## Results and Discussion

**Table 1: Medicinal plants for the treatment of wound infection in different parts of Iran along with additional information In traditional Iranian medicine, many plants**

Row	Scientific name	Family name	Persian name	Therapeutic name	Region
1	<i>Evonymuslatifolia</i>	Celasteraceae	Goshvarak	Disinfection of infected ulcers	Arasbaran
2	<i>Achilleamillefolium</i> L.	Compositae	Boumadaran	Disinfectants	Arasbaran
3	<i>Origanumvulgare</i>	Labiatae	Marzanjoush	Disinfectants	Arasbaran
4	<i>Rumexacetosa</i>	Polygonacea	Torshak	Disinfectants	Arasbaran
5	<i>Adiantumcapillus-veneris</i> L.	Polypodiaceae	Paresiavashan	Antiseptics	Ilam
6	<i>Alhagipersarum</i> Boiss. & Buhse.	Fabaceae	Kharshotor	Antiseptics	Ilam
7	<i>Allium akaka</i> Gmelin.	Aliaceae	Aneshk	Antiseptics	Ilam
8	<i>Allium ampeloprasum</i> L. subsp. <i>iranicum</i> Wendelbo	Aliaceae	Tare kouhi	Antiseptics	Ilam
9	<i>Anthemisaltissima</i> L.	Asteraceae	Babouneh	Washing the wound	Ilam
10	<i>Cirsiumcongestum</i> Fisch. & C. A. mey. Ex DC.	Asteraceae	Kagareanbouh	Antiseptics	Ilam
11	<i>Myrtuscommunis</i> L.	Myrtaceae	Mourd	Washing infected wound	Ilam
12	<i>Nerium oleander</i> L.	Apocynaceae	Kharzahreh	Washing the wound cuts	Ilam
13	<i>Scrophulariadeserti</i> Del.	Scrophulariaceae	Gole meymouni	Washing the wound cuts	Ilam
14	<i>Cercissiliquastrum</i>	Caesalpinaceae	Arghavan	Washing infected wounds	Kerman
15	<i>Citrulluscolocynthis</i>	Cucurbitaceae	Hendavane abojahl	Washing infected wounds	Kerman
16	<i>Lallemantiaroyleana</i>	Lamiaceae	Balango	Washing infected wounds and abscesses	Kerman
17	<i>Linumusatissimum</i>	Linaceae	Katan	Washing infected wounds and abscesses	Kerman
18		Malvaceae	panirak	Washing infected	Kerman

	<i>Malvamicrocarpa</i>			wounds and abscesses	
19	<i>Salvia compressa</i>	Lamiaceae	Maryamgoli garmsiri	Disinfecting infected wounds	Kerman
20	<i>Calotropisprocera</i>	<b>Asclepiadaceae</b>	Estabragh	Washing infected wounds	Khalije fars
21	<i>Ricinuscommunis</i>	<b>Euphorbiaceae</b>	Karchak	Disinfecting burn wounds	Khalije fars
22	<i>Amaranthaceae</i>	<i>Beta vulgaris L.</i>	Ghoghondar	Wound infection	Khuzistan
23	<i>AnthemiscotulaL.</i>	Asteraceae	Baboune bahare	Disinfection and washing of wounds	Khuzistan
24	<i>Artemisia maritime L.</i>	Asteraceae	Dermaneh	Disinfection skin infections	Khuzistan
25	<i>Artemisia sieberiBesser.</i>	Asteraceae	Dermane dashti	Disinfection skin infections	Khuzistan
26	<i>Calendula officinalis L.</i>	Asteraceae	Hamishe bahar	Disinfectants	Khuzistan
27	<i>Loniceranummulariifolia</i>	Caprifoliaceae	Shan	Disinfectants	Khuzistan
28	<i>SaturejakhuzistanicaJamzad</i>	Lamiaceae	Marze khuzestani	Washing of wounds	Khuzistan
29	<i>TeucriumpoliumL.</i>	Lamiaceae	Maryam nokhodi	Antiseptic wound	Khuzistan
30	<i>Aloe veraL.</i>	Liliaceae	Sabre zard	Antiseptic wound	Sistan
31	<i>Avena sativa L.</i>	Poaceae	Jo dosar	Antiseptic wound	Sistan
32	<i>EucalyptuscamaldulensisDehnh.</i>	Myrtaceae	Okaliptous	Antiseptic wound	Sistan
33	<i>Medicago sativa L.</i>	Fabaceae	Yonje	Antiseptic wound	Sistan
34	<i>Stellaria media (L.) Cyr.</i>	<b>Caryophyllaceae</b>	Dane ghanari	Antiseptic wound	Kazeroun
35	<i>SaturejahortensisL.</i>	<b>Lamiaceae</b>	marzeh	Antiseptic wound	Kazeroun
36	<i>Bromus tectorum L.</i>	<b>Poaceae</b>	Alafe pashmaki	Antiseptic wound	Kazeroun
37	<i>PegonomharmalaL.</i>	<b>Zygophyllaceae</b>	Esfand	Antiseptic wound	Kazeroun
38	<i>Allium sativumL.</i>	Alliaceae	Sir	Antiseptic wound	Mobarake Isfahan
39	<i>Salvia nemorosaL.</i>	Lamiaceae	Maryam goli	Antiseptic wound	Mobarake Isfahan
40	<i>AlceaarbelensisBeiss</i>	Malvaceae	Khatmi	Antiseptic wound	Mobarake Isfahan
41	<i>Centaureagauba(Bornm.) Wagenitz</i>	Asteraceae	Gole gandom	Antiseptic wound	Natanz Kashan

In the East, West, North, South and Central Iran, 41 plants are traditionally used for treatment of wound infection. Medicinal herbs such as chamomile, flax, veneris, oleander, savory, mallow, castor, sage, garlic, harmala etc. are the most important medicinal plants for disinfecting wounds in Iran. Other medicinal plants for the treatment of wound infection in different parts of Iran along with additional information are listed in in Table 1.

Table 1. Medicinal herbs for the treatment of wound infection native to Iranas well as their Persian names, scientific name, family name, part used and the area.

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The results showed that 41 medicinal herbs such as chamomile, flax, veneris, oleander, savory, mallow, castor, sage, garlic, harmala etc. are the most important medicinal plants for disinfecting wounds in Iran.

The first and foremost measure confronting surficial wounds caused by everyday events is to clean the wound site. Since contact with chemical, alkaline and acidic material and even sharp tools or burns may cause ulcer, the wound site should be disinfected with regard to its cause. One of the most important ways to disinfect wounds is use of herbs [28, 29].

Antioxidants and bioactive plant materials are chemical compounds which naturally are made in plants and bear medical, pharmaceutical and nutritional effects [30-47]. Wounds and a wide variety of other diseases are associated with increase in oxidative stress [48-57]. Hence, these plants which have antioxidant activity should act, at least in part, with this mechanism of action. If it is through, other plants which have antioxidant

activity may have positive effects on wound healing, too.

## Conclusion

The medicinal plants included in present study could disinfect wound due to bioactive substances, antioxidants and antimicrobial materials. One group of the most important of these agents are phenolic compounds which have antioxidant activity.

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