Journal of Applied Dental and Medical Sciences
NLM ID: 101671413 ISSN:2454-2288
Volume 2 Issue4 October-December 2016

Review Article

An Analysis of Herbs and Herbal Products with Potential Applications in Dentistry

Kathavate RN.[1], Mathews MA.[2] , Awale PK.[3] , Desai S [4], Tundalwar G[5]

[1,2] *B.D.S, Tatyasaheb Kore Dental College and Research Center, Mahatma Gandhi Hospital Campus, New Pargaon, Kolhapur, Maharashtra*
[3] *MD, Associate Professor & HOD, Dept. of AYUSH, MUHS, Nashik, Maharashtra*
[4] *MD, Associate Professor, Yashwant Ayurved College, Kolhapur, Maharashtra*
[5] *MD, Associate Professor, Shree Ayurved College, Nagpur, Maharashtra*

ARTICLE INFO

Keywords:
Herbs, Herbal products, Herbal Dentistry, Unconventional Dentistry, Public Health Dentistry.

ABSTRACT

Plants, herbs and herbal products have been used for curing different diseases and conditions since time immemorial. In every part of world they have been used. The Indians, Chinese, Mesopotamians and the Egyptians all developed their own traditional medicinal systems based on the observations made on various medicinal properties of the flora found all around them. Herbs and herbal products were widely and efficiently used for the treatment of different ailments. These ancients who started using them, developed them over the course of time had set some rules about how to use the plants as medicine avoiding their side effects and adverse reactions in the best possible manner.

The Indian traditional medicine system is a great repository of knowledge of the subject but we are lacking in its proper implementation of it in the modern times. There is comparatively less usage of medicinal plants directly in dentistry than other sectors. A comprehensive source of plants or herbs which are used in or have potential use to be used in dentistry is lacking and an increased research efforts are warranted for the rediscovery of the lost and seemingly important knowledge in the wake of potential threats such as the rise if antimicrobial resistance.

This paper tries to outline the major herbs and herbal products which have a potential to be used in dentistry.

Introduction

The use of herbs and herbal products in the treatment of different diseases and conditions is proposed as a solution for consequences due to allopathic drugs such as antibiotic resistance, drug dependency etc. Emergence of antibiotic resistance and the rise of multi drug resistant strains of bacteria or superbugs are categorised as one of the most important threats faced by humanity[1]. Another frontier in which the traditional forms of medicine can come into play is in the realm of public health where the existing traditional knowledge can be utilised for serving the healthcare needs of the larger society including even the remotest of areas through the medium of tele-medicine and tele-dentistry[2].

CLASSIFICATION

Herbal medicines are classified into four categories according to the World Health Organisation (WHO) [3]. They are classified on the basis of four criteria.

a) Origin
b) Evolution
c) Forms
d) Current usage

The various categories of herbal medicines are as follows[3, 4]

- Category 1: Indigenous herbal medicines

* Corresponding author: ***Dr. Aby Mathews M ,Address – B.D.S, Tatyasaheb Kore Dental College and Research Center, Mahatma Gandhi Hospital Campus, New Pargaon, Kolhapur, Maharashtra, India (416137). Phone number - +919404703593 ,E-mail address - drabymathews@gmail.com***

- Category 2: Herbal medicines in systems
- Category 3: Modified herbal medicines
- Category 4: Imported products with an herbal medicine base

This paper includes some of the important herbs and herbal products which are useful in the treatment of dental diseases and conditions worldwide. The various herbs and their products with their potential uses and side effects are as follows.

1. Neem (Azadirachta indica)

It is a tree in the mahogany family Meliaceae. It is one of two varieties in the class Azadirachta, and is local to India and the Indian subcontinent including Nepal, Pakistan, Bangladesh and Sri Lanka. It is seen in tropical and semi-tropical areas. Neem trees now likewise develop in islands situated in the southern coast of Iran. Neem oil is also produced from neem.

Uses: Neem when used as a mouth rinse is highly potent and demonstrated a significant reduction of plaque load and gingivitis. It is also indicated in the treatment of periodontal diseases[5].

Side effects: Neem is generally safe for most adults when consumed orally for up to ten weeks, when applied intra orally for up to six weeks, or for dermal application up to two weeks. Large intake for long periods of time may be unsafe. It may cause nephrotoxicity and hepatotoxicity[6].

2. Tulasi (Ocimum sanctum)

An aromatic plant in the family Lamiaceae which is primarily found in the Indian subcontinent. It is an erect, multi branched subshrub green or purple leaves that are strongly aromatic. Tulasi is grown for its religious significance, for its essential oil and its medicinal properties[7].

Uses: Consumption of Tulasi can reduce stress anxiety and depression[8]. It also acts as COX2 inhibitor and has very potent analgesic action in various conditions such as toothache, Oral submucous fibrosis, pemphigus etc.

Side effects: The undesired effects may include diabetes, stress, asthma, bronchitis and earache.

3. Miswak (Salvadora persica)

The word miswak is broad term used for sticks which are used to clean teeth and gums. These sticks are primarily derived from the Arak tree. It is generally taken from roots and also from its branches and bark. The fresh leaves have culinary uses and also used as traditional line of treatment for asthma, cough, piles, rheumatism, scurvy etc.

Uses: It possesses antimicrobial properties against several types of cariogenic bacteria and also have a plaque inhibiting property.

Side effects: In freshly prepared miswak, Mohammad et al showed no cytotoxic effect[9]. A twenty four hour sample of the same mixture however contained some cytotoxic compounds[10].

4. Eucalyptus (*Eucalyptus globulus*)

Most of the species are native to Australia. Very few of them are found in other parts of world. Eucalyptus is a tall tree with strong odour of its buds. The Eucalyptus oil has antiseptic actions and it has long been used medicinally. It is inhaled for respiratory and some viral infections.

Uses: Effective for temporary relief of sores, swollen gums etc[11].

Side effects: the undiluted Eucalyptus oil is toxic for cutaneous application or oral consumption. The 3.5 mL of undiluted oil can be fatal. Vomiting, nausea, dizziness, feeling, suffocation, stomach pain and burning these are the signs of eucalyptus poisoning[12].

5. Turmeric (Circuma longa)

Turmeric is very commonly used in culinary for its medicinal benefits. Turmeric powder has antiseptic, antioxidant and anti-inflammatory actions.

Uses: Infusions of turmeric with other contents gives instant relief from minor oral problems. Rub the turmeric mixtures on to aching tooth to relieve pain and swelling. A paste made up from turmeric powder, salt and other ingredients gives relief from gingivitis and periodontitis[13].

Side effects: Turmeric increases blood clotting time and might cause excess bleeding during and after surgery. Cases have been reported of gastro-oesophageal reflex disease (GERD) worsening because of turmeric in specific cases[14]. Other colouring agents may be added in to turmeric powder such as lead oxide which slightly changes the colour of turmeric powder which can cause adverse effects[15].

6. Aloe Vera (Aloe barbadensis)

Aloe Vera is known to have antimicrobial and anti inflammatory properties. It is also known to work in the treatment of diabetic patients and it also has immune-boosting properties.

Uses: Aloe Vera can be used for dental caries prevention and enhancing periodontal health[16].

Side effects: Aloe Vera can induce hypoglycaemia in certain patients and can also increase bleeding problems. It may also cause allergic skin reaction, constipation, dehydration and cutaneous inflammations.

7. Garlic (Allium sativum)

Garlic is used as a household remedy for many diseases from ancient times. It is used for prevention and treatment of various diseases as well as to ensure longevity. Garlic possesses antibacterial properties and can be used to treat a variety of infections. Garlic is a good source of vitamins and many other trace elements which is essential for the maintenance of optimum health[17].

Uses: A small piece of garlic held in mouth for 4 to 5 minutes sterilizes the oral cavity. The fresh garlic infusions act against S.pyogenes and C.diptheriae within 2 to 3 minutes[18].

Side effects: the most common adverse effect of garlic is that it gives strong garlic smell to breath and sweat. The rare cases of anaphylaxis are also reported. Some species of garlic can cause oral and throat ulcerations, respiratory difficulties, nausea, irritable bowel and diarrhoea[19].

8. Cloves (*Syzygium aromaticum*)

The oil of clove is used medicinally and also in perfumes. It is also used as a spice. Cloves have antiseptic, antiemetic and stimulant properties. Various forms of cloves are used to treat the oral, intestinal, circulatory, and respiratory conditions.

Uses: Oil of cloves is used for temporary relief from toothache and it is effective for sore gums as well. The chewing of whole dried bud of clove is very famous use for halitosis[20].

Side effects: The chemical content of clove named ‘eugenol’, acts as blood-thinning agent and can affects blood clotting process, promoting abnormal bleeding. In known cases of bleeding disorders (eg. Hemophilia) or under anticoagulants, strictly large amount of clove have to be included with caution in diet. Large consumption of clove on a daily basis may increases risk of seizures. Toxicosis as a result of intake of improperly stored clove are also been reported[21].

9. Peppermint (Mentha piperita)

This plant grows at the height of three feet approximately in open and preferably moist areas. It is

characterised by purple flowers and dark green leaves. The flowers and leaves are used to treat many diseases such as fever diarrhoea etc.

Uses: Peppermint oil gives relief from toothache. Peppermint containing mouthwashes is shown to give relief from gingival inflammation[22].

Side effects: Peppermint might induce skin rashes, acidity and aggravate hiatal hernias and intestinal ulcers[23]. Peppermint may interact with the rate of iron absorption in the body.

10. Red Clover (Trifolium pratense)

The red clover blossoms are useful in treating skin infections, boils and acne. It is also has a blood purification action. It also has affect as mild sedative.

Uses: Red clover infusions are helpful in healing and soothing inflamed gums. The ointment has antibiotic properties and used in gingival abscess. It is also used as a root canal medicament[20].

Side effects: It is advisable to avoid large doses during pregnancy and lactation. Cases have been reported of abnormal lactation[24].

11. Marigold (*Calendula officinalis*)

It is common plant used as remedy for years which has yellow or orange-yellow flowers and semi-circular fruit of strong odour. It has antiseptic effects. Marigold extract can be used for treating burns and wounds. It also has diuretic and antispasmodic properties. It can also be used to treat impetigo of scalp.

Use: Marigold with other contents rinsing gives relief from ulcers, inflammations, and also acts as muscle relaxant in cases of pain associated with the jaw joints and also discomfort due to orthodontic procedures[25, 26].

Side effects: To sum up marigold is safe to use generally. Take precautions if patient is known allergic to ragweed and related plants[26].

12. Ginseng (Panax ginseng)

Two varieties of ginseng are found, East Asian variety and a North American variety. It has forked roots and small greenish flowers. The root of ginseng has medicinal properties. It contains calcium, various vitamins (A, B12, and E), iron, and other trace elements. Ginseng is commonly used to resolve digestive problems. It also promotes appetite.

Uses: Promotes circulation and helps in healing of inflamed gingival tissue[27].

Side effect: Elderly or weak patients especially those who with fevers should avoid the large quantities of ginseng. There is some side effect reported due to excess intake of it which includes headache, nausea, nose bleeding, altered blood pressures, and chest or breast pain[28]. The most commonly reported adverse reaction due to acute overdose of ginseng is bleeding. Mild overdose might result in xerostomia, fever, itching and fatigue[29].

13. Horsetail (Equisetum sp.)

This promotes in healing and is reduces fever. It has anti inflammatory properties, facilitates coagulation of blood, and aids in healing process.

Uses: Can be used as an ingredient in mouthwash and mouth rinses to relieve oral and gingival infections[30].

Side effects: Long term oral intake of Horsetail is unsafe. Horsetail contains thiaminase which might result in accelerated lysing of thiamine. Theoretically this might cause thiamine deficiency. Alcoholic people are generally thiamine deficient and taking horsetail might aggravate the thiamine deficiency in these cases[31].

14. Kelp (Laminariales sp.)

Kelp is a large seaweed species which contains PABA, potassium, a variety of vitamins, trace elements and other chemicals and nutrients.

Uses: Daily intake of kelp ensures healthy gums and bones[32]. It can be used for treatment of goitre, various ulcers, chronic conditions such as obesity, and treatment of the effects of radiation.

Side effects: Kelp is proven unsafe for oral intake as it contains in high amounts. This can harm thyroid gland. It might also contain arsenic which is very poisonous[33].

15. Licorice Root (Glycyrrhiza glabra)

Licorice has been used for its antibiotic properties in ulcers and for its anti-inflammatory properties in allergic conditions and as a stimulant for the digestive system and an expectorant in cases of asthma and bronchitis.

Use: Licorice root is used in oral hygiene products such as toothpaste and mouthwashes for its sweetness and flavour. It also inhibits plaque growth.

Side effects: It is safe to avoid licorice intake in known cases of heart disease hypertension etc[34].

16. Cayenne (*Capsicum annuum*[35])

Cayenne has an antiseptic action against clostridium, streptococcus and bacillus species. It also contains a dark red capsanthin pigment and some other carotenoids which are compounds which enhance the immune functions of the body.

Uses: Topical application of oil of cayenne and gives emergency relief from toothache. Topical application of its extract is found to have uses in cases of herpes zoster and recurrent apthous stomatitis[35].

Side effects: It causes skin irritation, burning, and itching with large amount of uses. It is also extremely irritating to the eyes, nose, and throat. Avoid using excessive quantities and also on sensitive skin and around eyes[36].

17. Comfrey (*Symphytum asperum*)

Comfrey is known to be used to treat intestinal and respiratory diseases. Comfrey is a rich source of various vitamins (A, C and E), trace elements such as phosphorus and potassium and other compounds such as starch and tannins. It generally grows in damp areas and its leaves are prickly green which grows along its stalk.

Uses: It can be used for relieving pain when soaked with a warm cloth and applies on unbroken skin; it eases the tension especially in the joints. It can be used to relieve jaw tension. It relieves pain due to braces treatment and tooth fractures as well[37].

Side effects: Oral consumption for more than three months might increases chances of liver damage. Pyrrolizidine alkaloids (PA's) present in comfrey might complicate existing liver disorders. It is safe to be applied on unbroken skin; however caution has to be taken while applying on cut skin which might lead to an increased rate of absorption of the constituients[38].

18. Dandelion (*Taraxacum officinale*)

Some species of taraxacum family are found as commonplace wild flowers worldwide. Some of them are native to North America and Eurasia. It had been used in cooking from old days. The petals and roots along with other ingredients are used in wine, traditional British drinks, beer, tea and coffee. Dandelion contains calcium, magnesium, iron, zinc, phosphorus, biotin, choline, sulfure, fats, niacin, PABA, proteins and a variety of vitamins. The petals, leaves and roots are used to treat various infections. They are also used to treat bile and liver problems.

Uses: It can be used in the treatment of intra oral or extra oral abscesses. It also has blood purification properties[39].

Side effects: Its pollen can cause allergic reactions when taken orally or cutaneous application in some

cases. Contact dermatitis cases are reported after handling this. It is known to increase the chances of hyperkalemia when combined with potassium-sparing diuretics.

19. Elderberry (Sambucus sp.)

The various species are found in North America and some warmer parts of Europe. These plants grow in damp grounds. Fruits are small in size and edible and have high vitamin C content. Dark purple elder berries are used to make wine. They can also be used to treat cough and cold, colic infections, diarrhoea, rheumatism etc.

Uses: Infusions of elderberry are helpful after gingival surgery and after suturing. The rinsing helps tissues in proper healing and it prevents scars[40].

Side effects: The ripened or cooked berries of most of the Sambucus species are edible but they are poisonous if uncooked. Sambucus nigra is thought to be the only nontoxic variety but still slightly cooked berries should be preferred for culinary purposes. The parts of Sambucus plant contains cyanide- including glycoside (which metabolises and gives cyanide) at a certain amount of this can cause a toxic build up of cyanide in the body[41].

20. Myrrh (Commiphora opobalsamum)

Myrrh has been used as antiseptic from long times to treat digestion and respiratory conditions.

Uses: Used in the treatment of pyorrhoea due to its property of promoting healing process. Isolations from myrrh help to heal gingival conditions[42].

Side effects: It is considered to be safe for intake in minor quantities. It might cause skin rash on direct application to skin. It might also cause diarrhoea if taken orally in excess amounts[43].

21. Parsley (*Petroselinum crispum*)

Parsley is an aromatic herb commonly used as a seasoning for food; It is a good source of Vitamin A and C and it also contains trace elements such as Potassium. It also has diuretic properties.

Uses: Chewing on parsley can result in elimination of halitosis.

Side effects: Excessive consumption of parsley may hamper milk production in lactating mothers[44].

22. Rockrose (Cistus fumena)

They are known for their lovely bushes, which are abundantly secured by blooms at the season of bloom. This family comprises of around 170-200 species in eight genera, circulated principally in the temperate areas of Europe and the Mediterranean, additionally found in North America and South America. Most Cistaceae are subshrubs and low bushes, and some are herbaceous. They grow in dry and sunny natural surroundings. Cistaceae develop well on poor soils, and a considerable lot of them are grown in gardens.

Uses: The rockrose infusions are used to soothe and heal oral ulcers and canker sores. The rockrose extract are used to promote relaxation and are hence used in anti-anxiety medications[22].

Side effects: Not much data is available on side effects of rockrose and continued research is warranted in this area.

23. Rosemary (Rosemarinus officinalis)

Rosemary has been known to be used as a treatment for stomach, intestinal, liver and lung diseases. It has aromatic leaves, due to which it is used in cooking and in making perfumes other than being used medically.

Uses: Rosemary mouthwash helps in dealing with gingival disease and halitosis[45].

Side effects: Taking large amounts of rosemary can cause vomiting, uterine bleeding, kidney irritation,

increased sun sensitivity, skin redness, and allergic reactions[46].

24. Shepherd's Purse (Capsella bursa-pastoris)

Shepherd's purse is a commonly occurring weed. It has characteristic tiny white flowers. The flower of capsella is known to have diuretic as well as astringent properties.

Uses: Haemostasis can be achieved by a fresh extract of flowers after a tooth extraction procedure[47].

Side effects: Common side effects include high or low blood pressure and thyroid function irregularities. Paralysis, breathing difficulty, and death might also result with acute overdose. It contains oxalates, which can potentially aid in the formation of kidney stones. It is safe to avoid this drug in cases of past history of kidney stone[48].

25. Chickweed (Stellaria media)

Chickweed is one of the most common weeds, founds throughout the world but native to Europe and North America. Its leaves are used to soothe skin irritations.

Uses: Chickweed has anti inflammatory properties which can cure inflamed, oral soft tissues associated with oral cancers and it also helps to relieve pain from canker sores and other oral mucosal ulcerations.[49]

Side effects: Data regarding side effects of Chickweed is not available and it is considered wise to avoid its use in cases of pregnancy and breast feeding[50]. Some cases of paralysis have been reported due to large and inappropriate amounts of infusions[51, 52].

26. Sage (Salvia officinalis)

Sage is a wild growing plant from mint family. The leaves are used to treat pharyngitis, laryngitis and tonsillitis.

Uses: the infusion of sage helps in healing gingivitis and oral ulcers, inflammations and purulent conditions. It can also be used as a relaxing agent[53].

Side effects: It is known to cause irregularities in lactation[54] and hence best avoided by lactating mothers.

CONCLUSION

These herbs and their products can be used in dentistry due to their antiseptic, antioxidants, and analgesic properties. They have a potential to aid in healing of oral infections and are also found to have immunity enhancing properties. Although these plants and their products can be made useful they might evoke a side effect reaction if not prepared/ administered properly. Therefore responsible and effortful research is required for standardization and product development in the field. An integrated approach is needed from various fields of medicine for this effort. Inter disciplinary cooperation and research only can result in ushering a golden age of the herbal medicine once again. To effectively face the colossal odd that mounts against humanity in the form of Multi drug resistant organisms and the increasing toxicity of the new chemicals that we develop to counter these new organisms; it is imperative that we start this cooperation as early as possible and also strengthen the current efforts already in place.

DECLARATION

The authors declare that there is no conflict of interest regarding the publication of this paper.

REFERENCES

1. Kathavate R. N, Mathews M. A. Antimicrobial Stewardship-Need of the Era. International Journal of

Contemporary Medical Research. 2015;2(5):1215-1218.

2. Mathews M A, Kathavate R N, Tewary S, Pawashe K. Teledentistry: A New Frontier. International Journal of Oral Care and Research. 2015;3(10).
3. Gupta R, Ingle N A, Kaur N, Yadav P, Ingle E, Charania Z. Ayurveda in dentistry: A review. Journal of International Oral Health. 2015;7(8):141-143.
4. Chaudhary A, Singh N. Contribution of world health organization in the global acceptance of ayurveda. Journal of Ayurveda and Integrative Medicine. 2011;2(4):179.
5. Marco AB, Rinaldo AS, Jose GM, Cintia OC, Cláudio AR, Dinalva BQ et al. Efficacy of a neem mouthrinse (Azadirachtaindica) in the treatment of patients with chronic gingiviti. Journal of Medicinal Plants Research. 2008;2(11):341-346.
6. NEEM: Uses, Side Effects, Interactions and Warnings - WebMD [Internet]. Webmd.com. [cited 11 February 2016]. Available from: http://www.webmd.com/vitamins-supplements/ingredientmono-577-neem.aspx?activeingredientid=577
7. Ocimum tenuiflorum [Internet]. En.wikipedia.org. [cited 5 February 2016]. Available from: https://en.wikipedia.org/wiki/Ocimum_tenuiflorum
8. Holy basil: Uses, Side Effects, Interactions and Warnings - WebMD [Internet]. Webmd.com. [cited 11 February 2016]. Available from: http://www.webmd.com/vitamins-supplements/ingredientmono-1101-holy basil.aspx?activeingredientid=1101
9. Abo Al-Samh D Al-Bagieh N. A study of antibacterial activity of the miswak extract in vitro. Biomedical Letters. 1996;53:225-238.
10. AlSadhan RI Almas K. Miswak (Chewing stick): A cultural and scientific heritage. Saudi Dental Journal. 1999;11(2):80-88.
11. Burrow A, Eccles R, Jones A. The Effects of Camphor, Eucalyptus and Menthol Vapour on Nasal Resistance to Airflow and Nasal Sensation. Acta Oto-Laryngologica. 1983;96(1-2):157-161.
12. Eucalyptus: MedlinePlus Supplements [Internet]. Nlm.nih.gov. [cited 11 January 2016]. Available from: https://www.nlm.nih.gov/medlineplus/druginfo/natural/700.html
13. Duke J. The green pharmacy. New York, NY: St. Martin's Press; 1998.
14. Turmeric Powder - Health Benefits, Uses & Side Effects [Internet]. Medindia.net. [cited 11 February 2016]. Available from: http://www.medindia.net/alternativemedicine/turmeric-powder.asp
15. Lead Poisoning From Imported Asian Spices. 1st ed. Arizona: Arizona Department of Health Services.
16. Fani M, Kohanteb J. Inhibitory activity of Aloe vera gel on some clinically isolated cariogenic and periodontopathic bacteria. Journal of Oral Science. 2012;54(1):15-21.
17. Lawson L, Bauer R. Phytomedicines of Europe. Washington, DC: American Chemical Society; 1998.
18. Bent SKo R. Commonly used herbal medicines in the United States: a review. The American Journal of Medicine. 2004;116(7):478-485.
19. Block E. Garlic and other alliums. Cambridge, UK: RSC Pub.; 2010.
20. Wahlquist ML, Dalais FS. Phytoestrogens: emerging multifaceted plant compounds. Medical Journal of Australia.1997;167(3):199-120.

21. Chowdhury N Chowdhury N. 10 Dangerous Side Effects Of Cloves [Internet]. Stylecraze. [cited 9 November 2015]. Available from: http://www.stylecraze.com/articles/dangerous-side-effects-of-cloves/
22. Crowell PL. Prevention and therapy of cancer by dietary monoterpenes. Journal of Nutrition. 1999;129(3).
23. Peppermint. Review of natural Products. Facts & comparisons [database online]. St. Louis, MO: Wolters Kluwer Health Inc; October 2011.
24. Red clover. Review of natural products. Facts & comparisons [database online]. St. Louis, MO: Wolters Kluwer Health Inc; April 2007.
25. Capsicum: Uses, Side Effects, Interactions and Warnings - WebMD [Internet]. Webmd.com. 2015 [cited 21 December 2015]. Available from: http://www.webmd.com/vitamins-supplements/ingredientmono-945-cayenne pepper
26. Calendula officinalis [Internet]. En.wikipedia.org. 2016 [cited 11 October 2016]. Available from: https://en.wikipedia.org/wiki/Calendula_officinalis.
27. Kitts D, Hu C. Efficacy and safety of ginseng. Public Health Nutrition. 2000;3(4a):473-85.
28. *Kiefer D, Pantuso T. Panax ginseng. American Family Physician. 2003;68(8):1539-1542.*
29. Chen J, Chen T, Crampton L. Chinese medical herbology and pharmacology. City of Industry, Calif.: Art of Medicine Press; 2004.
30. Hamon NW, Awang DVC. Horsetail. Canadian Pharmacology Journal. 1992:399-400.
31. Fabre B, Geay B, Beaufils P. Thiaminase activity in equisetum arvense and its extracts. Plant Med Phytotherapy. 1993;26:190-197.
32. Chida KYamamoto I. Antitumor activity of a crude fucoidan fraction prepared from the roots of kelp (Laminaria species). The Kitasato Archives of Experimental Medicine journal. 1987;60(1-2):33-39.
33. Eliason B. Transient Hyperthyroidism in a Patient Taking Dietary Supplements Containing Kelp. The Journal of the American Board of Family Medicine. 1998;11(6):478-480.
34. Liquorice [Internet]. En.wikipedia.org. [cited 11 January 2016]. Available from: https://en.wikipedia.org/wiki/Liquorice
35. Christopher J. School of natural healing. Provo, Utah: BiWorld Publishers; 1999.
36. Capsicum: Uses, Side Effects, Interactions and Warnings - WebMD [Internet]. Webmd.com. 2015 [cited 21 December 2015]. Available from: http://www.webmd.com/vitamins-supplements/ingredientmono-945-cayenne pepper
37. Stickel F Seitz H. The efficacy and safety of comfrey. Public Health Nutrition. 2000;3(4a):501-508.
38. Abbott, P. J. Comfrey: assessing the low-dose health risk. Medical Journal of Australia. 1988;149(11-12):678-682.
39. Britton N, Brown A. An illustrated flora of the northern United States and Canada. New York: Dover Publications; 1970.
40. Sambucus [Internet]. En.wikipedia.org. [cited 10 September 2015]. Available from: https://en.wikipedia.org/wiki/Sambucus
41. McVicar J. Jekka's complete herb book. Vancouver: Raincoast Books; 2007.
42. Dolara P, Corte B, Ghelardini C, Pugliese A, Cerbai E, Menichetti S et al. Local Anaesthetic, Antibacterial and Antifungal Properties of

Sesquiterpenes from Myrrh. Planta Medica. 2000;66(4):356-358.

43. Al Faraj S. Antagonism of the anticoagulant effect of warfarin caused by the use of Commiphora molmolas a herbal medication: a case report. Annals of Tropical Medicine & Parasitology. 2005;99(2):219-220.
44. Duke J. The green pharmacy. New York, NY: St. Martin's Press; 1998.
45. Bisset N. Herbal drugs and phytopharmaceuticals. Stuttgart: Medpharm; 1994.
46. Rosemary: Uses, Side Effects, Interactions and Warnings - WebMD [Internet]. Webmd.com. [cited 11 January 2016]. Available from: http://www.webmd.com/vitamins-supplements/ingredientmono-154-rosemary.aspx?activeingredientid=154
47. Triantaphyllou, Georgios Blekas, Di K. Antioxidative properties of water extracts obtained from herbs of the species Lamiaceae. International Journal of Food Sciences and Nutrition. 2001;52(4):313-317.
48. Shepherd's Purse: Uses, Side Effects, Interactions and Warnings - WebMD [Internet]. Webmd.com. 2016 [cited 11 February 2016]. Available from: http://www.webmd.com/vitamins-supplements/ingredientmono-51-shepherd's purse.aspx?activeingredientid=51
49. [Internet]. Ageless.co.za. [cited 21 November 2015]. Available from: http://www.ageless.co.za/herb.htm
50. Chickweed: Uses, Side Effects, Interactions and Warnings - WebMD [Internet]. Webmd.com. [cited 11 November 2015]. Available from: http://www.webmd.com/vitamins-supplements/ingredientmono-622-chickweed.aspx?activeingredientid=622.
51. Chickweed. Review of natural products. Facts and comparisons [database online]. 2004. [cited 23 April, 2007]. Available from Wolters Kluwer Health, Inc.
52. Chickweed Uses, Benefits & Side Effects - Drugs.com Herbal Database [Internet]. Drugs.com. [cited 11 December 2015]. Available from: http://www.drugs.com/npc/chickweed.html
53. Yousefzadi M, Sonboli A, Karimi F, Ebrahimi S, Asghari B, Zeinali A. Antimicrobial Activity of Some Salvia Species Essential Oils from Iran. Zeitschrift für Naturforschung C. 2007;62(7-8).
54. Chaturvedi T. Uses of turmeric in dentistry: An update. Indian Journal of Dental Research. 2009;20(1):107.