

Azadirachta Indica and Its Use In Dentistry

Hiren Patel^{1*} Rahul Patel² Rajesh Patel³ Pranav Kurup⁴ Drashti Vaishnav⁵ Kety Pilcher⁶

¹Senior Lecturer, Department of Public Health Dentistry, Narsinhbhai Patel Dental College and Hospital, Sankalchand Patel University, Visnagar, Gujarat, India.

²Reader, Department of Public Health Dentistry, Narsinhbhai Patel Dental College and Hospital, Sankalchand Patel University, Visnagar, Gujarat, India.

³Senior Lecturer, Department of Public Health Dentistry, Narsinhbhai Patel Dental College and Hospital, Sankalchand Patel University, Visnagar, Gujarat, India.

⁴PG Student, Department of Public Health Dentistry, Narsinhbhai Patel Dental College and Hospital, Sankalchand Patel University, Visnagar, Gujarat, India.

⁵PG Student, Department of Public Health Dentistry, Narsinhbhai Patel Dental College and Hospital, Sankalchand Patel University, Visnagar, Gujarat, India.

⁶PG Student, Department of Public Health Dentistry, Narsinhbhai Patel Dental College and Hospital, Sankalchand Patel University, Visnagar, Gujarat, India.

ABSTRACT

Background: Plants have been used for centuries to improve dental health and to promote oral hygiene, and this practice persists in several communities throughout the world. Azadirachta Indica has a long history of healing power. Azadirachta indica, commonly known as neem, has attracted worldwide prominence in recent years, owing to its wide range of medicinal properties. Neem has been broadly used in Ayurveda, Unani and Homoeopathic medicine and has become a cynosure of modern medicine. It has shown to be an effective antimicrobial, antiinflammatory and anticancer agent and various indication of its use in dental science. This review discusses the history and chemical composition of Azadirachta Indica and its influence on oral health.

Keywords: Azadirachta indica, Antimicrobial, Antiinflammatory and Anticancer agent.

INTRODUCTION

Ayurveda is the most ancient natural healing system of India. The word Ayurveda means the science of life. It is to do with healing through herbs and natural means. This healing system was formulated by ancient Hindu seers who were enlightened men. Ayurveda is a part of Vedic science. Ayurveda is a branch of holy sciences. Ayurveda includes herbal supplements, right kind of diets, right kind of living. Therefore, the spiritual aspect is very much inherent. The most important things about Ayurvedic healing is that the herbs are not medicines, but natures gift to mankind, which have the medicinal properties. There are no side effects, so herbs are mother nature's finest healers¹. Herbs are those plants used traditionally by us as culinary, flavorings and increasingly, today as medicinal

purposes. Botanically however 'herbs' embraces all plants which have no woody stems above ground and which die back at the end of their growing period. More specifically, herbs are plants used medicinally or for their flavour or scent. Herbs with medicinal properties are useful and effective source of treatment of various diseases processes. Many drugs used in western medical science called allopathic medicine have their origin in medicinal plants².

Several parts of the plant such as the flower, stem, seed or root can be used for medical or aroma therapy qualities. Herbs can be administered in forms such as extracts, juices, teas, lozenges, inhalants, oils salves, capsules and herbal baths².

Received: Oct. 22, 2020; Accepted: Dec. 12, 2020

*Correspondence Dr. Hiren Patel.

Department of Public Health Dentistry, Narsinhbhai Patel Dental College and Hospital, Sankalchand Patel University, Visnagar, Gujarat, India.

Email: hiren24383@gmail.com

Modern day medicines may contain extracts of herbs or synthetic chemicals based on herbs, but what the natural form offers are less side effects and cheaper alternatives of pharmaceutical drugs³.

Herb's has been used from ancient times as a routine oral hygiene measurement like the use of neem stick to clean the oral cavity. Use of herbs for dental care is very common in indigenous system of medicine. Herb's possess antibacterial, ulcer healing, anti-plaque and anti-halitosis properties⁴.

Chewing sticks were used by the Babylonians some 7000 years ago, they were later used throughout the Greek and Rome and have been used by Jews, Egyptians and many other peoples. Today they are used in Africa, Asia and all over the world⁵. It has been suggested that the beneficial effects of the chewing stick are purely the result of mechanical action but several plants used as sources of chewing sticks do contain reasonable amounts of fluoride and many are claimed to have anticariogenic, antibiotic, anti-inflammatory or astringent properties. Chewing sticks are twigs, stems or roots into pieces of the size of a pencil and are usually frayed into a brush at one end with the teeth. Occasionally pieces of the stick are sharpened at one end and used as tooth picks. Chewing sponges are prepared from the pounded fibers of branches^{6,7,8} utilizing of various part of neem is one of the common oral health techniques in various part of the world. Hence the present review is carried out to boost the knowledge of utilization of neem as a herb in dentistry.

"look deep into nature, and then you will understand everything better"

ACTIVE COMPOUNDS OF AZADIRACHTA INDICA;

(Neem) shows therapeutics role in health management due to rich source of various types of ingredients. The most important active constituent is azadirachtin and the others are nimbolin, nimbin, nimbidin, nimbidol, sodium nimbin, gedunin, salannin, and quercetin. Leaves contain ingredients such as nimbin, nimbanene, 6-desacetylnimbinene, nimbandiol, nimbolide, ascorbic acid, n-hexacosanol and amino acid, 7-desacetyl-7-benzoylazadiradione, 7-desacetyl-7-benzoylgedunin, 17-hydroxyazadiradione, and nimbiol^{9,10,11}. Quercetin and β -sitosterol,

polyphenolic flavonoids, were purified from neem fresh leaves and were known to have antibacterial and antifungal properties¹².and seeds hold valuable constituents including gedunin and azadirachtin.

NEEM AS A HERB IN DENTISTRY

Prevention of caries;

Extracts from Neem sticks or bark have been inhibiting the growth of *Streptococcus mutans* and significant reductions in bacterial adhesion on tooth, suggesting that it can reduce the ability of some streptococci to colonize on tooth surfaces and help in prevention of dental caries¹³.

Neem Extract as a Potent Root Canal Irrigant;

Debridement of an infected root canal and complete elimination of microorganisms are objectives of an effective endodontic therapy. Neem leaf extract is a viable medicament against *C. albicans*, *E. faecalis* and even their mixed state¹⁴.

Treatment of Chronic Gingivitis and Periodontal Diseases;

Azadirachta indica based mouth rinses are highly efficacious and may be used as an alternative therapy in the treatment of periodontal diseases¹⁵.

Usage of Neem Extract in Oral Care Industry;

Neem bark is used as an active ingredient in a number of tooth pastes and tooth powders because of its antibacterial properties. Its usage are proven to be beneficial for tooth and gums health.

Anti-Carcinogenic Properties of Neem Extracts;

Isolated components of Neem tree have shown impressive efficacy against cancer cells and in boosting the body's immune response against carcinogenesis. Various mechanisms have been suggested in this context such as boosting the lymphocytic and cell mediated immunity, including the natural killer cells, which are able to destroy viruses, bacteria and cancer cells. Neem extracts can also protect against chemically induced carcinogenesis and liver damage by increasing the antioxidant levels of body¹⁶.

CONCLUSION

Health is a very important factor in life and the state of our health often dictates what we can and cannot do. Our bodies are very complex systems that suffer from various ailments and maladies due to unhealthy or unbalanced diets. With our lives running at a fast pace and being subjected to weakening factors, like stress, expectations, and internal and external pressures, our health and well-being can be significantly reduced. Improper nutrition, tiresome schedules, and processed foods are other factors which lead to debilitating conditions of the body. Today these conditions can be effectively healed through natural, herbal medications that have minimal side effects. Herbal medicines are drugs of plant origin used to treat diseases and to attain or maintain a condition of improved oral and overall health. Herbs with medicinal properties are a useful and effective source of treatment for various diseases. Many drugs used in Western medical science (called allopathic medicine) have their origin in medicinal plants. There was a time when alternative medicine was believed to be unreliable and that herbal remedies were considered nothing more than customary treatments that had little or no effect. These days, however, many types of alternative medicine are considered to be well-established treatments, and some are even prescribed by the doctors. With the rising cost of prescription medicine and increasing number of reports about the side-effects associated with prescription medicine, more and more people are turning towards herbal remedies. Though a vast number of plants have not been studied for their medicinal properties, these may become new sources of medicinal activity. It is believed that the plants (traditional medicine) will be a major source of new chemicals and raw materials for the pharmaceutical industry in the near future. Ayurvedic extracts from different parts of herbs which are discussed in this literature, have proved to promote general, mental and oral health. The active component of the herbs has been shown to have a wide spectrum of biological actions. These include anti-inflammatory, antioxidant, anticarcinogenic, antibacterial, antifungal, hypotensive, hypocholesteremic gingivitis, periodontitis, and periodontal infections. A relevant point that arose while compiling this data and needs mention is the need for

documentation of research activities and publications of results, whether positive or negative, in peer-reviewed journals. Hence, networking of the various research activities carried out by different scientists has now become the need of the hour in order to achieve a permanent cure for the patients entangled in the clutches of a various oral disease. It is definite that the miraculous touch of these herbs would again review the lost smiles of our debilitated ill patients.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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