

Efficacy of a smoking cessation intervention using the natural agents

Zaka Un Nisaa^{1*}, Ayesha Zafar², Fatima Zafar²

¹Faculty of Medicine, Quaid-i-Azam University, Islamabad, Pakistan

²Institute of Biochemistry and Biotechnology, University of the Punjab, Lahore, Pakistan

*Corresponding author: Zaka Un Nisaa, Faculty of Medicine, Quaid-i-Azam University, Islamabad, Pakistan, Tel: +923335143940; E-mail: zakamaqsood112@gmail.com

Abstract

Background: Cigarettes are considered as most addictive product and many people who quit smoking relapse within days. Today the use of tobacco is a greatest preventable cause of death in the world. Several pharmacological interventions are licensed for smoking cessation but other than this there are natural agents which could be very effective in smoking cessation.

Purpose of study: The present study is carried out to find out potential natural agents that could be used for smoking cessation and their mode of action in quitting smoking.

Methodology: An electronic database search was performed in Embase, Medline and other search engines. Different articles were identified and their abstracts and full texts were assessed in the final review.

Results: After a comprehensive research it was found that the natural agents which can be used to stop smoking include fresh lime, black pepper, water, ginger, grape juice, St. John wort, ginseng, calamus, vitamin and antioxidants. Lime basically helps in alkalinizing the tissues which are normally more acidic in tobacco users. The vapours of black pepper oil reduce the craving for cigarettes. St. John's wort is known to have antidepressant potential and helps in smoking cessation. Calamus removes the residual toxins in the lungs from cigarette smoking thus helps in quitting smoking. Consuming more vitamin C when a person is trying to drop off cigarettes prove to be effective in smoking cessation. Antioxidants decrease nicotine craving in those who are trying to quit smoking without making use of nicotine replacement therapy (NRT).

Conclusion: Overall this study shows that natural agents are effective and affordable, thus in combination with a behavioral support, these agents can be very helpful in quitting smoking.

Keywords: Natural agents; Herbs; Smoking cessation; Nicotine withdrawal

Introduction

Cigarette smoking is one of the biggest causes of death in both developing and developed countries. Worldwide there are 1.2 billion smokers and on average 4 million smokers died every year and this figure will rise to 10 million by the year 2030 and 70% deaths will be in developing countries.¹ Reduction in prevalence of smoking is seen in some developed countries but on the other hand increase trend of smoking is seen in developing countries. According to WHO in Europe economic burden associated with smoking was (£) 97.7 billion to (£) 130.3 billion. According to world health report (2002), smoking is a leading cause of premature death in Europe. Smoking increase

chances of respiratory and cardiovascular diseases and smokers are ten times more likely to develop the peripheral vascular disease as compare to nonsmokers.²

Smoking cessation can successfully lead to the reduction of premature death and it also increases the quality of life. Smoking cessation is becoming an important component of national and international tobacco control policies and smoking cessation programs that focus on prevention, diagnosis and treatment of tobacco dependence must be an important part of primary health care. Smoking cessation decreases the chance of lung cancer, stroke, respiratory and cardiovascular diseases. Smoking is difficult habit to break and many smokers can't quit smoking on their own and they need assistance in quitting smoking.

Many methods have been developed which helps in quitting smoking. Little information is available regarding the use of natural agents in smoking cessation but like a pharmacological intervention, they play an equally important role in smoking cessation and this role of natural agents in smoking cessation should not be ignored. Throughout our evolution, the medicinal use of natural agents is great.

Many people in the past use different herbs to relieve pain and to treat different diseases and injuries. In the recent decade, the role of natural products in drug discovery and drug development has been shown. Very little work has been done on the role of natural agents in smoking cessation. This review was done with the objective to determine the effectiveness and mode of action of natural agents in smoking cessation.

Methodology

In this review, electronic database search was performed in the Pubmed, Embase, Medline and other search engines and we identified studies mentioning "natural agents in smoking cessation" in the title and abstract. We include Randomized control trials, observational studies (i.e. cohort studies, case control studies) and reviews. We excluded those studies which involve pharmacological treatment and behavioral modification in smoking cessation (Figure 1).

Results

We identified and screened 20 studies by title and abstract. We excluded 13 studies because they were judged not to be related to Natural agents in smoking cessation. The remaining 7 articles met the inclusion criteria and their abstract and full texts were assessed in the final review.

Fresh lime in smoking cessation

Lime is an easily accessible and can be used as an alternative to nicotine gum in smoking cessation. A randomized controlled trial was conducted by Researchers from Thailand's Srinakharinwirot University to determine the efficacy of fresh lime in smoking cessation as compared to nicotine gum. This study shows that lime can be effectively used as a smoking cessation agent. Lime has an antimicrobial activity against multiple strains of E coli and smokers usually have compromised immunity.³⁻⁵ Therefore, further studies are recommended to find out the effectiveness of lime in smoking cessation.

Black pepper in smoking cessation

The effectiveness of black pepper in smoking cessation has been approved by various studies around the world. A study was conducted by Jed E. Rose in which forty-eight smokers participated and results show that craving for cigarettes was significantly reduced in respondents who puffed black pepper vapours of essential oil and this

significantly reduced craving at a session of 3 hours.⁶ Black pepper provides the airway sensation of smoking resulting in short-term satisfaction and also reduce craving for cigarette smoking.⁷

St John wort in smoking cessation

St John wort is an herb which contains many pharmacologically active ingredients like naphthodianthrone, phloroglucinol derivatives and flavonoids. Besides its role as an antidepressant, it is also effective in smoking cessation.⁸ St John's wort extract basically works by inhibiting the re-uptake of norepinephrine and serotonin (5-HT) into presynaptic axons.⁹ Studies also confirmed that it is well tolerated in smokers. On the other hand, there are studies which show that this herb is not effective in smoking cessation.¹⁰

Vitamins and antioxidants

Smoking is basically associated with the decrease plasma concentration of vitamins (A, E, C) and antioxidants; therefore plasma resistance towards oxidative changes decreases. Studies confirmed that use of natural agents along with pharmacological therapy is very effective in smoking cessation.¹¹ According to different studies smokers usually have a low level of ascorbic acid than non-smokers and more than one year without smoking is required to attain plasma concentrations similar to those of people who have never smoked.¹²⁻¹⁴ Medicinal herbs like *Eugenia aromaticum* and *Astragalus membranaceus* have high antioxidant activity and studies proved that they have an important role in reducing withdrawal symptoms.¹⁵ It is also found from studies that daily supplements of Oat extract is beneficial in smoking cessation by reducing the consumption of cigarettes from 20 to fewer than 9.

Calamus in smoking cessation

Since ancient times Calamus has been known for its medicinal values and it has numerous traditional applications. Calamus is already used for the treatment of chest pain, appetite, indigestion and cough fever. A number of active constituents and essential oils have been isolated and characterized; in calamus alpha and beta-asarone are a bioactive component (Table 1). Calamus plays an effective role as an antidepressant, antibacterial and antioxidant. According to some studies, calamus also has an effective role in smoking cessation. The exact mechanism of action of calamus in smoking cessation has not been found as previously no clinical trials have been done. Therefore clinical trials should be conducted to find the mode of action of calamus in smoking cessation.¹⁶

Discussion

This review was done to put light on the natural agents that can be used for smoking cessation. Studies conducted previously basically focused on pharmacological therapies on smoking cessation but only a few studies are carried out which shows that other than pharmacological and behavioral therapies natural agents are also effective in smoking cessation. Studies conducted previously shown that smokers usually have low vitamin C in their bodies. Efficacy of fresh lime in smoking cessation has been confirmed by studies. Fresh lime is inexpensive and easily accessible to smokers than NRT which is expensive. Those smokers who are living in poor countries and can't afford pharmacological treatment lime can be prove very effective.^{3,12,17,18} The exact mechanism of lime in smoking cessation is not known but few studies which are carried out shows that by combating vitamin C level lime help to quit smoking. Also, it has antibacterial activity and smokers usually have compromised immunity. Further studies

should be carried out to find out the efficacy and mechanism of action of lime in smoking cessation.

Another natural agent which was used in smoking cessation is Calamus. Not much work has been done in finding the mode of action of calamus in smoking cessation. According to studies, calamus has a role as an antidepressant, antibacterial and antioxidant.¹⁹ Smokers usually have compromised immunity and studies shows that smokers usually experience mouth ulcers and cold symptoms after they stop smoking. There are studies which show that depression is associated with smoking cessation and calamus is well known for its antidepressant activities. Therefore it is suggested that by keeping in view antibacterial and antidepressant action of calamus further studies should be conducted.

Conclusions

Natural agents are effective in smoking cessation and also they are inexpensive, easily available and helpful for those smokers who are not willing to use pharmacological treatment. Therefore it is suggested that role of the natural agents in smoking cessation should be consider and further studies should be conducted on the evaluation of the effectiveness of natural agents in smoking cessation.

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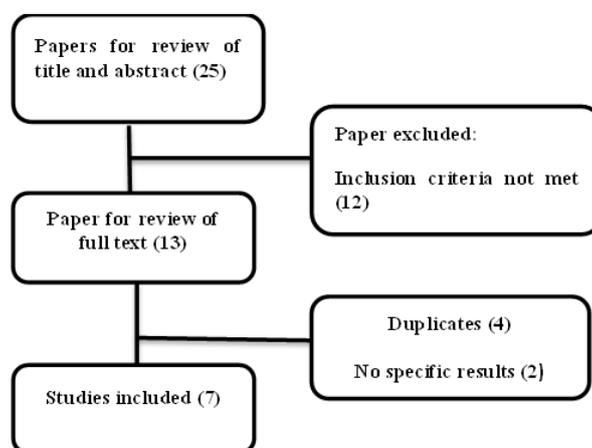


Figure 1: Flow chart of the review process.

Table 1: Studies conducted on the use of the natural agents in smoking cessation.

Study	Objective of this study	Methodology	Results
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Inhalation of vapour from black pepper extract reduces smoking withdrawal symptoms.	To determine the effect of a cigarette substitute delivering vapour of black pepper essential oil.	Randomized controlled trial. Forty-eight smokers were included in this study.	Craving for cigarettes was significantly reduced in smokers who inhaled vapours of black pepper essential oil.
Efficacy of Fresh Lime Smoking Cessation	To determine the efficacy of fresh lime as a smoking cessation compared with nicotine gum	Randomized controlled trial, hundred smokers were included in this study.	Fresh lime can be used effectively as a smoking cessation aid. It could be associated with combating the known decline of the serum levels of ascorbic acid caused by smoking.
Effects of Medicinal Tea on smoking Cessation and reducing smoking withdrawal symptoms.	To determine the effect of medicinal herb tea on smoking cessation.	Randomized controlled trial smoking withdrawal symptoms were evaluated in 100 male human smokers.	MHT accelerates the conversion of nicotine into cotinine which is a metabolite of nicotine. Results show that this herbal tea is effective in smoking cessation.
Randomized Clinical Trial of St. John's Wort (SJW) Smoking Cessation	To investigate the efficacy of St John wort for smoking cessation.	Randomized controlled trial	SJW did not increase smoking abstinence rates
Hypericum perforatum L. (St John's wort) extract inhibits dopamine re-uptake in striatal brain slices. An implication for use in smoking cessation treatment?	To determine the mode of action of St John wort in smoking cessation		St John's wort extract (SJW), directly inhibit the reuptake of norepinephrine (NE) and serotonin (5-HT) into pre-synaptic axons, additionally it provides a rationale for the treatment of nicotine or drug addiction.
Botanical Remedies for		Review	Results of this study stated that American calamus is

Nicotine
Addiction

used for smoking cessation
but the exact mechanism is
not known.
