

A Need to Spread Awareness Regarding the Ill Effects of Arecanut and Its Commercial Products on Oral Health

Rachana V Prabhu^{1*}, Vishnudas Prabhu² and Laxmikanth Chatra¹

¹Department of Oral Medicine and Radiology, Yenepoya University, India

²Department of Oral and Maxillofacial Pathology, Yenepoya University, India

Abstract

Areca nut, commonly known as betel nut or supari, is a fruit of areca catechu palm tree, which is native of South Asia and Pacific islands. The seed or endosperm is consumed fresh, boiled or after sun drying or curing. Areca nut is chewed by itself or in the form of commercial preparations like pan masala and gutka. Chewing areca nut is thought to have central nervous system stimulating effect and along with this it is known to have salivary stimulating and digestive properties. Along with the beneficial effects of areca nut one of its most harmful effects on the human body in general and oral cavity in particular is the development of potentially malignant disorder called Oral Submucous Fibrosis. The present paper discusses the ill effects of consumption of areca nut and its commercial products on oral health and a need to spread the awareness regarding the same.

Keywords: Areca nut; Potentially malignant disorders; Oral submucous fibrosis; Oral cancer

Introduction

Areca nut or supari is a fruit of areca catechu palm tree, which is native of South Asia and Pacific Islands. It is commonly called as betel nut as it is often chewed wrapped in betel leaves. While fresh, the husk is green in color and the nut inside is very soft whereas in a ripe fruit the husk becomes yellow or orange and the fruit inside hardens to a wood like consistency [1]. The seed or endosperm is consumed fresh, boiled, or after sun drying or curing. Areca nut consumed with betel leaf, lime with or without tobacco is called as Pan or betel quid. It may include clove, cardamom, catechu etc. for extra flavouring [1]. Areca nut is chewed by itself or in the form of commercial preparations like pan masala and gutka [2].

Pan masala is basically a preparation of areca nut, catechu, cardamom, lime and a number of natural and artificial perfuming and flavouring materials. Gutka or Gutkha is a preparation of crushed areca nut, tobacco, catechu, paraffin, slaked lime and sweet or savory flavourings [1].

Both products are often sweetened to enhance the taste. Both are manufactured in India and exported to a few other countries. It is sold across India in small, individual-sized packets that cost between 2 and 10 rupees per packet [2].

There is an estimated 600 million people chewing betel nut worldwide. A survey done by Indian Dental Association (IDA) found that 10% to 14% of school students and 70% of college going students in Mumbai chew gutkha and pan masala [3].

Areca nut primarily consists of alkaloids like arecoline, arecaidine, guvacine and guvacoline, (Flavonols and tannins) and Betel nut specific (mainly Saffrole) as its main constituents, which is primarily carcinogenic. Both areca nut containing commercial products are often advertised as mouth fresheners, leading to a much higher frequency of use, so that these younger chewers constitute an alarming population for a new epidemic of oral cancer [4].

Effects of Areca nut

Areca nuts are chewed with betel leaf for their effects as a mild central nervous system stimulant. The effect is thought due to one of its

content known as arecoline that leads to alertness, increased stamina, a sense of well-being and euphoria. It is known to stimulate salivation and thus aiding in digestion. According to traditional Ayurvedic medicine, chewing areca nut is a good remedy for deworming and along with betel leaf it prevents halitosis. Along with these beneficial effects of areca nut one of its most harmful effects on the human body in general and oral cavity in particular is the development of potentially malignant disorder called Oral Submucous Fibrosis (OSF) [4].

Oral Submucous Fibrosis (OSF)

Oral submucous fibrosis (OSF) is a chronic, insidious oral mucosal condition that occurs predominantly among Indians and occasionally in other Asians especially Taiwanese and sporadically in Europeans. It was first described by Pindborg and Sirsat. It is regarded as a pre-cancerous condition [4].

The hallmark of the disease is sub mucosal fibrosis that affects the oral cavity and progressively involves the pharynx and the upper esophagus. It is characterized by juxta-epithelial inflammatory reaction followed by chronic change in the fibro-elasticity of the lamina propria and is associated with epithelial atrophy. This leads to burning sensation in the oral cavity, blanching, and stiffening of oral mucosa and oropharynx, resulting in restricted mouth opening which in turn causes limited food consumption, difficulty in maintaining oral health, and impairs the ability to speak [5].

Although the pathogenesis of the disease is thought to be multifactorial, chewing of betel quid/areca nut has been recognized as one of the most significant risk factors for OSF [6].

***Corresponding author:** Rachana V Prabhu, Department of Oral Medicine and Radiology, Yenepoya Dental College, Yenepoya University, Mangalore, Karnataka 515018, India, Tel: 08147020203; E-mail: drachanaacharya@rediffmail.com

Received February 24, 2014; Accepted April 18, 2014; Published April 21, 2014

Citation: Prabhu RV, Prabhu V, Chatra L (2014) A Need to Spread Awareness Regarding the Ill Effects of Arecanut and Its Commercial Products on Oral Health. Trop Med Surg 2: 167. doi:10.4172/2329-9088.1000167

Copyright: © 2014 Prabhu RV, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

A number of etiological factors have been discussed to play a role in the pathogenesis of this disease. Factors include areca nut chewing, ingestion of chillies, genetic and immunologic processes, and nutritional deficiencies [5].

Various epidemiological studies and histopathological effects on fibroblast and keratinocytes support the chewing of areca nut as one of the most important risk factors for OSF [4].

Areca nut is made up of alkaloid and flavonoid components. Four alkaloids namely arecoline, arecaidine, guvacine, and guvacoline have been identified in areca nut, of which arecoline is the most potent agent and plays a major role in the pathogenesis of OSF by causing an abnormal increase in collagen production. The flavonoid components like tannins and catechins have been found to have some direct influence on collagen metabolism [5].

The tremendous rise in the incidence of this condition has been reported. It is predominantly seen in Asian countries like India, Bangladesh, Sri Lanka, Pakistan, Taiwan, Southern China, Polynesia and Micronesia. Several cases are reported among Asian immigrants to the UK and South and East Africa [7].

Worldwide estimates in 1996 indicate that 2.5 million people were found to be affected by this disease. Whereas in 2002, in the Indian continent alone, the statistics for OSF was about 5 million people (0.5% of the population of India) [8]. In recent years marked increase in the occurrence of OSF was observed in many parts of India like Bihar, MP, Gujarat and Maharashtra and the younger generation are suffering more due to incoming of areca nut products in different multicoloured attractive pouches [9].

The prevalence of OSF among patients attending dental OPD in Jaipur, Rajasthan, India in 2012 was found to be 3.39% [10]. Therefore OSF is considered as a public health issue in many parts of world including the UK, South Africa, and many Southeast Asian countries [11]. The reason for the continuous rise in the incidence of OSF could be attributed to increased popularity of commercially available areca nut preparations, i.e., pan masala/gutkha in India and an increased uptake of this habit by young people due to easy access, effective price ranges, and marketing strategies [5].

In 2008, about 5 million children under 15 were addicted to gutkha. A survey in Uttar Pradesh and Madhya Pradesh found precursors of mouth cancers in 16% of the children [2]. According to the 2009-2010 survey by Global Adult Tobacco Survey, 53.5% of Indians use tobacco products. Tobacco and gutkha chewing makes up the majority of those figures with 48.07% of Indians using them, while bidi and cigarette smokers make up 8.4% and 5.9% of the population respectively. The percentage of male and female tobacco and gutkha chewers is 66.2% and 40% respectively [2].

Based on a systematic review of all published literature, International Agency for Research on Cancer reported that Areca Nut Chewing is strongly associated with oral cancer (IARC monograph). Arecanut chewing has been shown to be associated with development of cancers of various organs like liver, esophagus (food-pipe), stomach, lung, and cervix [2]. The malignant transformation rate of OSF has been reported to be around 7.6% over a 17-year period [12]. OSF is now accepted globally as an Indian disease having highest malignant potential than any oral premalignant lesions [13]. The incidence of OSF in India is on the rise. The reason for rapid increase of the disease is due to the consumption of commercially prepared areca nut preparations (pan masala and gutkha) in India.

Steps Taken By Government to Ban Areca Nut Containing Commercial Products

Highly addictive and a known carcinogen, gutkha is the subject of much controversy in India. Many states have sought to curb its immense popularity by taxing sales of gutkha heavily or by banning it outright. Many states of India have banned the sale, manufacture, distribution and storage of gutkha and all its variants. As of May 2013, gutkha is banned in 24 states and 3 union territories. Gutkha is banned under the provision to ban any food product containing harmful adulterants in the centrally enacted Food Safety and Regulation (Prohibition) Act 2011. The ban is enforced by the state public health ministry, the state Food and Drug Administration and the local police. Enforcement of the law is generally lax and many shops still sell gutkha, although it may not be displayed. Enforcement is stricter in some regions like Mumbai and Delhi, but illegal sale of gutkha still occurs [2].

Conclusion

In spite of strict ban of commercially available areca nut products, Gutka and paan masala continue to be freely available across the state. The alkaloid and flavonoid content of the areca nut plays a very important role in the major events that occur in pathogenesis of OSF which has a high potential of tuning into malignancy. It is well said that 'Prevention is better than cure' and it holds true in case of the management of this irreversible disease. Thus awareness of its ill effects and cessation of the areca nut chewing habit forms the mainstay for the therapy.

References

1. Betel-quid and areca-nut chewing.
2. Javed F, Chotai M, Mehmood A, Almas K (2010) Oral mucosal disorders associated with habitual gutkha usage. A review *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 109: 857-864.
3. Gupta PC, Ray CS (2004) Epidemiology of betel quid usage. *Ann Acad Med Singapore* 33: 31-36.
4. Angadi PV, Rao SS (2011) Areca nut in pathogenesis of oral submucous fibrosis: revisited. *Oral Maxillofac Surg* 15: 1-9.
5. Sinor PN, Gupta PC, Murti PR, Bhonsle RB, Daftary DK, et al. (1990) A case-control study of oral submucous fibrosis with special reference to the etiologic role of areca nut. *J Oral Pathol Med* 19: 94-98.
6. Jeng JH, Chang MC, Hahn LJ (2001) Role of areca nut in betel quid-associated chemical carcinogenesis: current awareness and future perspectives. *Oral Oncol* 37: 477-492.
7. Tilakarathne WM, Klinikowski MF, Saku T, Peters TJ, Warnakulasuriya S (2006) Oral submucous fibrosis: Review on aetiology and pathogenesis. *Oral Oncology* 42: 561-568.
8. Chiu CJ, Chang ML, Chiang CP, Hahn LJ, Hsieh LL, et al. (2002) Interaction of collagen related genes and susceptibility to betel quid induced oral submucous fibrosis. *Cancer Epidemiol Biomarkers Prev* 11: 646-653.
9. Ahmad MS (2006) Epidemiological and etiological study of oral submucous fibrosis among Gutkha chewers of Patna, Bihar, India. *J Indian Soc Pedod Prev Dent* 24: 84-88.
10. Sharma R, Raj SS, Miahra G, Reddy Y G, Shenava S, et al. (2014) Prevalence of Oral submucous fibrosis in patients visiting dental College in rural area of Jaipur, Rajasthan. *JIOMR* 24: 1-4.
11. Rajalalitha P, Vali S (2005) Molecular pathogenesis of oral submucous fibrosis-a collagen metabolic disorder. *J Oral Pathol Med* 34: 321-328.
12. Pindborg JJ, Murti PR, Bhonsle RB, Gupta PC, Daftary DK, et al. (1984) Oral submucous fibrosis as a precancerous condition. *Scand J Dent Res* 89: 270-274.
13. Gupta MK, Mhaske S, Ragavendra R, Imtiaz (2008) Oral Submucous Fibrosis- Current concepts in Etiopathogenesis. *People's journal of Scientific Research* 1: 39-44.