

# Areca Nut or Betel Nut Control is Mandatory if India Wants to Reduce the Burden of Cancer Especially Cancer of the Oral Cavity

**Chaturvedi Pankaj**

Associate Professor, Department of Head and Neck Oncology, Tata Memorial Hospital, Parel, Mumbai, Maharashtra, India

**Correspondence:** Chaturvedi Pankaj, Associate Professor, Department of Head and Neck Service, Tata Memorial Hospital Dr E Borges Road, Parel, Mumbai-400012, Maharashtra, India, Phone: +912224177189, Fax: +912224146937 e-mail: pankaj37@yahoo.com

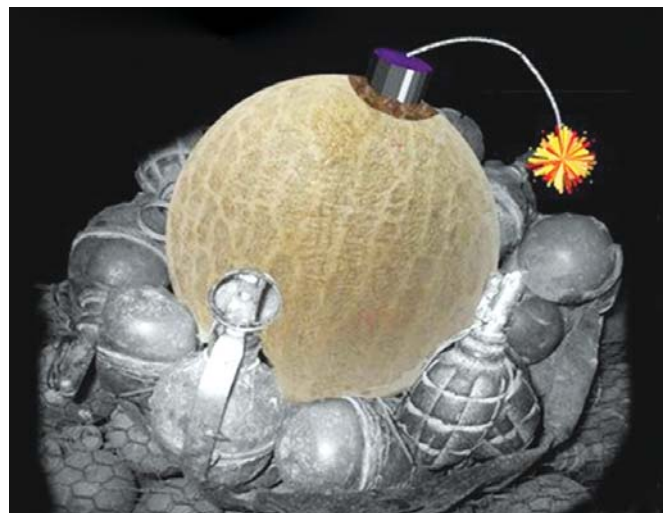
## Abstract

A lesser known reason of epidemic proportion of oral cancer in India is the rampant use of Areca nut chewing. Just like tobacco, areca nut or betel nut is a psychostimulant, an addictive substance and a carcinogen. The cancer causing properties of areca nut have been well-reported in animal, human and epidemiologic studies. The World Health Organization and International Agency for Research on Cancer classified areca nut as a Group 1 human carcinogens with sufficient evidence of increased risk of submucous fibrosis (precancerous oral lesion) and cancers of the oral cavity, pharynx, and esophagus. This was based upon several studies from India, Bangladesh, Pakistan and Taiwan. Cancers caused by betel nut chewing also shows a strong dose–response relationship for frequency and duration of chewing. It is postulated that areca nut-specific N-nitroso compounds converted from alkaloids are responsible for oral and pharyngeal cancer. There are several other reports that have linked areca nut chewing (with or without tobacco) with hepatocellular carcinoma, cholangiocarcinoma, cancers of the larynx, stomach, lung and cervix in humans.

**Keywords:** Areca nut, betel nut, oral cancer, supari cancer.

## INTRODUCTION

India has the dubious distinction of harboring the world's largest number of oral cancer patients with an annual age standardized incidence of 12.5 per 100,000. In India, oral cancer amounts to 9.4 percent of all cancers.<sup>1</sup> Historically, this has been attributed to widespread usage of smokeless tobacco an established carcinogen. Well-supported by the evidence, great emphasis is being laid by the government and nongovernment organizations towards effective tobacco control. Over last several decades, billions of rupees have been spent to educate public, implement laws effectively, rehabilitate tobacco growers, build cessation facility, create health care infrastructure, etc. to reduce the smokeless tobacco usage. However, oral cancer that is an uncommon disease in the west, continues to be the major cause of cancer related death in Indian men.<sup>1</sup> A lesser known reason of epidemic proportion of oral cancer in India is the rampant use of areca nut chewing. Just like tobacco, areca nut or betel nut is a psychostimulant, an addictive substance and a carcinogen.<sup>2</sup> The cancer causing properties of areca nut have been well-reported in animal, human and epidemiologic studies.<sup>3</sup> The World Health Organization and International Agency for Research on Cancer classified areca nut as a



**Fig. 1:** Areca bomb—India is sitting on a areca nut bomb that will continue to cause casualties even if the tobacco ban is successful. With increasing focus on tobacco, gutkha industry is switching over to areca nut containing products which are harmful and carcinogenic. Unfortunately, the law does not mandate any warning on these products

Group 1 human carcinogens with sufficient evidence of increased risk of submucous fibrosis (precancerous oral lesion) and cancers of the oral cavity, pharynx, and esophagus.<sup>4-7</sup> This was based upon several studies from

India, Bangladesh, Pakistan and Taiwan. Cancers caused by betel nut chewing also shows a strong dose-response relationship for frequency and duration of chewing. It is postulated that areca nut-specific N-nitroso compounds converted from alkaloids are responsible for oral and pharyngeal cancer.<sup>4</sup> There are several other reports that have linked areca nut chewing (with or without tobacco) with hepatocellular carcinoma, cholangiocarcinoma, cancers of the larynx, stomach, lung and cervix in humans.<sup>4</sup> In mice researchers have shown that, betel quid extract given by gavages produced carcinoma of lung, stomach, liver and salivary gland.<sup>4</sup> The subcutaneous injection of areca nut in mice produced fibrosarcomas at the injection site.<sup>4</sup> Animal research has shown that Pan Masala in the diet led to tumors in various organs, most frequently adenocarcinoma of the lung.<sup>4</sup> In another experiment, Arecoline was given as gavage and it produced carcinoma of lung, stomach and hemangiomas of liver.<sup>4</sup> Betel nut may be a synergistic carcinogen along with tobacco with which it is commonly consumed in India. A study by the National Health Research Institute reported that betel nut chewing if combined with smoking and drinking the chances of developing esophageal cancer was about 195 times, chances of developing pharynx cancer is 96.9 times and larynx cancer is about 40.3 times higher than those who do not.<sup>8</sup> Areca nut habitué have higher incidence of other diseases too. A population-based cohort study in Taiwan reported that betel quid chewing resulted in an statistically significant increase in the risk of over all mortality and cerebrovascular deaths in the elderly population.<sup>9</sup> Areca nut addiction has also been found to be associated with heart attacks,<sup>10</sup> arrhythmia,<sup>11</sup> metabolic syndrome<sup>12</sup> and diabetes.<sup>13,14</sup> There are reports of acute exacerbation of asthma and hypertension in areca nut habitué.<sup>15</sup> Babies born to mothers who are areca nut habitué are usually smaller in size and weight similar to the effect of smoking on neonates.<sup>16,17</sup> Babies born to Areca habitué mothers demonstrate a withdrawal syndrome as well.<sup>17</sup>

Areca nut may be consumed alone or as a betel quid in combination with betel leaf and slaked lime and may contain other substances like tobacco, catechu, spices or sweeteners. Betel leaf that is commonly consumed with this nut contains a known carcinogen named Safrole. The lime in the betel quid enhances the extraction of the areca nut alkaloids by salivary degradation and promotes carcinogenesis. Areca nut contains 4 major alkaloids,

arecoline, arecaidine, guvacine and guvacoline that are responsible for most biological actions. The degree of areca nut addiction can be gauged from the fact that the south east Asian migrants continues this unique habit even after immigration to the western world and has been aptly named "betelmania".<sup>18,19</sup> The areca nut derived alkaloids are cholinergic agonists and they affect the nervous system via acetylcholine. Prolonged use of areca nut leads to peculiar facial and systemic features that have been termed as Gutkha's syndrome.<sup>20</sup> Areca nut chewing is well-known to cause staining of teeth, attrition of teeth, and creation of wear facets and higher occurrence of periodontitis.<sup>20</sup>

Areca nut for consumption is obtained from areca catechu and it is the fourth most common addictive substance (after tobacco, alcohol and caffeine) and has 600 million users globally. It is possibly the second most consumed carcinogen after tobacco in the Indian subcontinent. In India, areca nut is chewed for variety of reasons such as stress reliever, mouthfreshener, concentration improver and a digestive following food. Being an addictive substance, its withdrawal symptoms are mood swings, anxiety, and irritability, loss of concentration, sleep disturbance and craving. Areca nut psychosis has been reported to occur in heavy users following sudden cessation of the habit. India is the greatest producer of Areca nut producing about 3,30,000 million tonnes a year (nearly half of global Areca nut production). The total area under Areca nut in the country is estimated to be around 3,72,000 hectares and total production is 3,40,000 tons.<sup>21</sup> It is estimated that nearly ten million people depend on Areca nut industry for their livelihood in India.<sup>21</sup> Most of the Areca nut production is consumed within India because it has limited export potential.<sup>21</sup> Areca nut products (Gutkha, Pan Masala, etc.) are thriving on misleading advertisement portraying "supari or betel nut" as safe product and marketed as mouth fresheners. These may be more dangerous than Areca nut alone because they are kept in mouth for a longer time. The other promoting factors of this industry are lack of statutory warning, low cost, easy availability, attractive packaging, aggressive marketing, etc. This has given rise to a new generation of users who are innocent adolescents and youth. Courtesy high pitch tobacco control movement, several researches and warnings on Areca nut usage have failed to get attention from the civic society and the policy makers. Considering this ignorance, most smokeless tobacco industries have clandestinely switched over to 0% tobacco



products that continue to contain Areca nut. The antigutkha lobby had been able to get a ban on this product by High Courts of several states by 2002. However, it was reversed by Supreme Court in 2004 on the premise that the Central Government and not the State Government that can ban such a product under Section 7(4) of Prevention of Food Adulteration Act. The Indian policy makers and public at large needs to wake-up to handle this issue on an emergency basis. The Government of India should not only work towards a law to ban this product but also initiate a comprehensive National Areca Nut Control Program to save

millions of Indian. To begin with, a strong pictorial health warning or at least a textual statutory warning should be made mandatory on all such products. Even in absence of such a law, it is the responsibility of the manufacturers to inform their patrons about the hazardous nature of their products. In addition, there should be a ban on advertising (direct and indirect) of this product, ban on sale to minors, impose restriction on chewing in public place/work place and spitting should invite big penalty. The California Environment Protection Agency has listed Areca nut as carcinogen and a hazardous product.<sup>22</sup> Taiwan, the land of



**Fig. 2:** Pictures showing young boys selling tobacco and areca nut products in Mumbai. Areca nut products are freely available to younger generation who consider it as a mouth freshener



**Fig. 3:** The BEST buses and the bus shelters in Mumbai sporting Gutkha/Pan Masala ads. With ban on tobacco ads, these companies blatantly advertise (surrogate advertisement) areca nut product with same name as tobacco containing counterparts. Needless to say that all ads contain misleading messages for the consumers



**Fig. 4:** A young lady having mouth cancer due to areca nut chewing. She was consuming gutkha for 6 years and got this cancer at the age of 18 years. Unlike tobacco, areca nut chewing has got social approval (even amongst women) and some consume it as a digestive after meals

famous scantily dressed "betel nut beauties" selling betel nut and tobacco product on roadside, have realized the problem and are doing much better than us. Taiwan Government has cracked down on the "betel nut beauties", offering subsidy to farmers for growing alternative crops and engaged in Betel Nut Control Program, long back. On October 8, 2009 Taiwanese Bureau of National Health Insurance<sup>23</sup> announced the plan to impose health tax on betel nuts. Canada has already banned sale of Areca nut products.<sup>4</sup> US FDA has issued an import alert and banned inter-state traffic of areca nut.<sup>4</sup> India is yet to make a visible beginning!

*Note:* For more information on Areca nut you may visit the site <http://sites.google.com/site/quitnut/>.

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