

## All in the name of flavour, fragrance & freshness: Commonly used smokeless tobacco preparations in & around a tertiary hospital in India

Shridhar Dwivedi, Amitesh Aggarwal & Munish Dev

*Department of Medicine/Preventive Cardiology, University College of Medical Sciences, University of Delhi & GTB Hospital, Delhi, India*

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**Background & objectives:** There is a general misconception that smokeless tobacco particularly sweetened and flavoured *paan masala* and *gutkas* are safe to use. The present study was undertaken with the objective of highlighting the deceptive and aggressive marketing techniques adopted by the manufacturers of smokeless tobacco preparations exploiting cultural, social and religious values. Another object was to highlight the lack of transparency in terms of content, weight, quality control and warning.

**Methods:** All empty pouches of the used *paan masalas*, *gutka*, *khaini* or *surti* in and around a tertiary care hospital at east Delhi were collected. Their constituents were studied as per written declaration by the manufacturers on each packet. Information on net weight, cost, presence and type of warning, and quality assurance on each brand provided on side of the packets was noted.

**Results:** A total of 1136 pouches of 33 brands/varieties were collected. Most of the *gutka* preparations contained tobacco, betel nut, unknown flavouring agents, undeclared spices and heavy metals. Warning regarding the harmful effect of tobacco was written in 90.9 per cent of brands with 81.8 per cent in English language only in minute font. Contents of the products were mentioned in 84.8 per cent of brands and only 27.3 per cent of those mentioned the net weight of the ingredients.

**Interpretation & conclusions:** Seemingly 'innocuous' tobacco preparations in the form of *paan masalas*, *gutka*, *khaini*, *surti* or mouth fresheners contain various harmful substance like tobacco, betel nut, sugar coated fennel, saccharine, heavy metals like silver, unknown flavouring agents and undeclared spices in unknown quantities. Lack of transparency in terms of content, weight, quality control and warning is duping unsuspecting consumers.

**Key words** *Gutkas* - *paan masala* - quality control - smokeless tobacco

Eleven countries in WHO South-East Asia Region (SEAR) are inhabited by 1.536 billion people comprising about 25.35 per cent of the world population. Tobacco consuming habits of people of

this Region are unique in the sense that they are used to smoke tobacco as well as consume smokeless tobacco (SLT), whereas in other parts of the world smoking is the most popular form of tobacco use<sup>1</sup>. As per Global

Adult Tobacco Survey conducted in India<sup>2</sup>, 21 per cent adults use only smokeless tobacco among tobacco users and 5 per cent smoke as well as use smokeless tobacco. There is a general misconception among lay public that smokeless tobacco particularly sweetened and flavoured *paan masalas* (commercial preparation of areca nut and/or tobacco and spices) and *gutka* (mixture of tobacco, areca nut and molasses) are relatively safe to use. However, it is now well established that chronic use of tobacco, betel nut and saccharin based products are responsible for the increasing prevalence of early onset submucous fibrosis, leukoplakia, oral cancers and tendency to develop diabetes, hypertension and coronary artery disease (CAD) at young age in Indian people<sup>3-7</sup>.

Variour brands of *paan masalas* and *gutkas* are being advertised and sold in Indian markets without impunity in the name of flavour, fragrance and freshness. With increasing ban on smoking at public places, the use of smokeless tobacco preparations as a replacement has risen. Therefore, the present study was undertaken with the objective of highlighting the deceptive and aggressive marketing techniques adopted by the manufacturers of smokeless tobacco preparations exploiting cultural, social and religious values. The study was also aimed to highlight the lack of transparency in terms of content, weight, quality control and warning.

### Material & Methods

The empty pouches of the used *paan masalas*, *gutka*, *khaini* (chewing tobacco mixed with other ingredients like lime, spices and added flavours) or *surti* (dried tobacco leaves for chewing)<sup>8</sup> were collected from the entry and exit gate of a tertiary care hospital in Delhi, India and nearby parking areas; places where people usually throw their pouches before entering or leaving the hospital premises. The pouches were then segregated according to their trade names and their constituents as per written declaration by the manufacturer on each packet were noted. Information on net weight, cost, presence and type of warning, and quality assurance on each brand provided on side of the sachets was noted. These details were tabulated and the ill effects of these constituents on long term usage were noted from literature. As the hospital where this study was carried out, is a tertiary care hospital catering to the health needs of entire East Delhi and neighbouring States, this exercise also provided an idea about the type of usage and preferences regarding *paan masalas* and *gutkas* (smokeless tobacco) in local area.

### Results & Discussion

A total of 1136 pouches representing 33 samples/brands were collected over a period of 30 days. Warning regarding the harmful effect of tobacco was written in 90.9 per cent of brands with 81.8 per cent in English language only (Table I), in a font size less than mandatory 3 mm. The contents of the products were mentioned in 84.8 per cent of brands and only 27.3 per cent of these mentioned the net weight of the ingredients. The plausible biomolecules based upon the declared contents and their pharmacological and toxicological profile was worked out on the basis of available literature (Table II). As evident, most of the *gutka* preparations contained tobacco (*Nicotiana tabacum*), betel nut (*Areca catechu*), unknown flavouring agents and undeclared spices.

There are several public health issues related with free sale, purchase and consumption of *paan masalas* and *gutkas* over the counters. Full contents were not given in most of these preparations. Even in those where contents were written, the actual quantity (weight per gram) was not mentioned. There was no quality control of the ingredients mentioned. This is despite the fact that smokeless tobacco products are classified as food material under the provisions of Prevention of Food Adulteration (PFA) Rules (1955)<sup>9</sup>. In such a situation there is a possibility that the spurious or substandard variety of material might have been used. There is also a possibility of an adulterant being mixed in these products because of lack of quality control. Products having high sugar contents like sugar coated fennel, sugar coated betel nuts, dates, *mishri* (crystallized sugar balls), and saccharine used in certain oral freshners may not be healthy. Prevention of Food Adulteration Rules (1955)<sup>9</sup> clearly state that every package of food (including smokeless tobacco) which is permitted to contain artificial sweetener shall carry the following label, namely name of artificial sweetener and a warning that it is not recommended for children and should also mention quantity of sugar added per 100 g of product. It is also pertinent to mention that in many products aromatic substances like fennel (*Foeniculum vulgare*), cardamom (*Elettaria cardamomum*), clove (*Syzygium aromaticum*), mint (*Mentha arvensis*) and rose petal (*Rosa centifolia*) are mixed with cardiotoxic substances like tobacco (*Nicotiana tabacum*) and betel nut (*Areca catechu*). *Nicotiana tabacum* and *Areca catechu* may have an adverse effect on the sperm count as has been proved in animal studies<sup>10</sup> and might be carcinogenic<sup>11,12</sup>. Use of heavy metals like silver in some preparations

**Table I.** Details of different brands of smokeless tobacco/*gutka/paan masala/* mouth fresheners

S. No.	Contents (As mentioned by the manufacturer)	Net weight (g)	Statutory warning (Language)	Quality assurance
Preparations containing tobacco as per manufacturer's declaration				
1.	Tobacco	7	Yes (Hindi, English, Urdu)	No
2.	Tobacco, limewater, menthol, mixed spices, natural flavours, artificial flavours	3	Yes (English only)	No
3.	Tobacco, limewater, menthol	3.6	Yes (English only)	No
4.	Betel nut, tobacco, coconut, camphor, aromatic spices	N/M	Yes (English only)	No
5.	Tobacco leaves, flavours, spices	9	Yes (English only)	No
6.	Tobacco & flavouring agents	N/M	Yes (English only)	No
7.	Betel nut, tobacco, catechu, lime, menthol, permitted spices & flavours	N/M	Yes (Hindi only)	No
8.	Premium tobacco, added flavours	N/M	Yes (English only)	No
9.	Tobacco, betel nut, lime, cardamom	N/M	Yes (English only)	No
10.	Betel nut, tobacco, catechu, lime	N/M	Yes (English only)	No
11.	Betel nut, tobacco, catechu, lime, menthol, cardamom, natural & artificial flavours	N/M	Yes (English only)	No
12.	Betel nut, tobacco, catechu, lime, permitted spices and flavours	N/M	Yes (English only)	No
13.	Betel nut, tobacco, catechu, lime	N/M	Yes (English only)	No
14.	Betel nut, tobacco, catechu, lime, saffron, spices, added flavour	N/M	Yes (English only)	No
15.	Betel nut, tobacco, catechu, lime, saffron, spices flavour	N/M	Yes (English only)	No
16.	Betel nut, tobacco, catechu, lime, cardamom, menthol, permitted spices & flavours	1.8	Yes (English only)	No
17.	Betel nuts, tobacco, permitted spices, flavour	N/M	Yes (English only)	No
Preparations not containing tobacco/undetermined as per manufacturer's declaration				
18.	Betel nuts, catechu, cardamom, lime menthol, spices, added flavours	N/M	Yes (English only)	No
19.	Betel nut, sugar saccharin, menthol, flavour	N/M	Yes (English only)	Nil
20.	Betel nut, catechu, lime, menthol, cardamom, natural and artificial flavours	N/M	Yes (English only)	No
21.	Added flavours	N/M	Yes (English only)	No
22.	Betel nuts, catechu, lime, cardamom, permitted spices, flavour, added flavours	N/M	Yes (English only)	No

Contd...

S. No.	Contents (As mentioned by the manufacturer)	Net weight (g)	Statutory warning (Language)	Quality assurance
23.	Betel nut, catechu, lime, cardamom, menthol, artificial flavours	4	Yes (English only)	No
24	Betel nut, catechu, cardamom, lime, menthol, natural & artificial flavour	N/M	Yes (English only)	No
25	N/M	18	Yes (English only)	No
26.	Betel nuts, catechu, lime, cardamom, menthol, natural and artificial flavours and mixed spices	N/M	Yes (English only)	No
27.	Saccharin	N/M	Yes (English only)	No
28.	Supari, sugar, saccharin, menthol	N/M	Yes (English only)	No
29.	Saccharin sodium, sugar 42 g/100 g, artificial sweetener	3.5	Yes (English only)	No
30.	Dry dates, mishri, sugarballs, silver coated fennel, silver coated cardamom, rose petals, betel leaves, herbs, natural flavour	N/M	No	No
31.	Not mentioned	4	Yes (English only)	No
32.	Dates, fennel, sugar coated fennel, cardamom, sweet pills, silver coated menthol, sugar pills, natural herbs, added flavour	N/M	No	No
33	Supari, sugar, menthol, cardamom, saccharin, added permitted flavours	N/M	Yes (English only)	No

N/M, not mentioned

could pose serious renal or hepatic problems. It has also been recorded that many *paan masala* products contained unknown spices and flavouring substances which could be harmful. Individuals consuming *paan masala* in high quantities may be susceptible to toxic effects of saccharin including bladder distension and bladder cancer as average and maximum amounts of saccharin in *pan masala* samples were found to be 1.6 and 3 fold higher than the maximum permitted levels allowed under PFA act of India<sup>13</sup>.

The manufacturers of these preparations adopt deceptive and aggressive marketing techniques. Many of these *paan masalas* or *gutka* create a false impression as if the product is related to betel (*Piper betel*) in some form or other by giving it a name associated with *paan* like '*paan masala*'. Alternatively, they put a picture of betel over the sachet. Another technique is to give it a catchy name, slogan or phrase to attract young mind. The very fact that none of these products have betel in any form amounts to total deception. This is a deliberate marketing technique to impress people because use of

betel leaves in the Indian society is culturally, socially and religiously acceptable. The bioactive molecule hydroxychavicol of betel plant (*Piper betel*) inhibits platelet aggregation, thromboxane B2 and prostaglandin G2<sup>14-16</sup>.

One of the drawbacks of this study was lack of any detailed chemical analysis of the constituents of the preparations. Secondly, the data shown here were representative of a local catchment area of a hospital which perhaps can not be extrapolated to a larger community.

In conclusion, smokeless tobacco consumption is a common habit in South East Asia Region. Many people are unknowingly getting caught in the trap set by the tobacco selling companies. These companies market their products as mouth fresheners and flavouring agents. Chronic consumption of these potentially toxic substances may lead to submucous fibrosis, leukoplakia, oral cancers other disorders. Lack of transparency in terms of content, weight, quality control and warning is silently playing havoc with the lives of unsuspecting

**Table II.** Putative constituents of *paan masalas*, *gutkas*, mouth freshners and their known pharmacological and toxicological profile

Vernacular Name	Botanical name	Plant part used	Bioactive substances	Pharmacological activities	Toxicity	Clinico-epidemiological effects
Betel /Paan	<i>Piper betel</i>	Leaf	Hydroxychavicol, chavibetol, estragole, eugenol, methyleugenol, hydroxycatechol	Inhibits platelet aggregation, thromboxane B2 and prostaglandin G2 <sup>14-16</sup> , antioxidant	Submucous fibrosis when taken together with betel nut	Oral leukoplakia, submucosal fibrosis, oral cancer <sup>17</sup> when taken together with betel nut
Betel nut	<i>Arecca catechu</i>	Nut	Areca-red, arecaidin, arecaine, arecolidine, ascorbic acid, β-carotene, β-sitosterol	Alters plasminogen/plasmin system leading to increased deposition of extracellular matrix in buccal system <sup>18</sup>	Carcinogenic <sup>19</sup> , fibrotic, diabetogenic	Submucosal fibrosis, oral cancer, metabolic syndrome, cardiovascular diseases in men <sup>17,20,21-23</sup>
Tobacco	<i>Nicotiana tabacum</i>	Leaf	Nicotine	Binds to acetylcholine receptors in autonomous ganglia, adrenal medulla, neuromuscular junctions, brain causing catecholamine release. hypercoagulable state, coronary vasoconstriction, promotes atherosclerosis <sup>24</sup> , nicotine induced cardiovascular effects may be due to matrix metalloproteinases <sup>25</sup>	Cholinergic symptoms, vascular collapse, hypotension, bradycardia, dyspnoea, respiratory failure	Coronary artery disease, hypertension stroke, Obstructive lung diseases, lung cancer, peripheral vascular disease, oral cancer <sup>26</sup>
Catechu/ Katha	<i>Acacia catechu</i>	Heartwood / bark	Catechin, epicatechin, catechutanic acid	Antipyretic, antidiarrhoeal, hypoglycaemic, hepatoprotective, hypotensive <sup>27</sup> , stimulate cell mediated immunity <sup>28</sup>		
Slaked lime	Calcium hydroxide	Ca (OH) <sub>2</sub>		Carcinogenic <sup>29-31</sup>	Difficulty in breathing, internal bleeding, hypotension, skeletal muscle paralysis, carcinogenic	
Saffron	<i>Crocus sativus</i>	Dried stigmas	Zeaxanthin, lycopene, crocetin, picrocrocin	Inhibits nucleic acid synthesis, disrupts DNA protein interactions <sup>32</sup>	Kidney disorders, antioxidant, antidepressant, anticancer, prevents atherosclerosis <sup>33</sup>	Antihypertensive, cytopenias, increase in blood urea nitrogen and creatinine <sup>34</sup>

consumers. There is an urgent need to reign in these products under a mandatory quality control.

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