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Incidence of Patulin in Scented Supari

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During a survey of foods and feed for mycotoxin patulin was found as a natural contaminant in a sample of scenten supari. The implications of mycotoxin contamination in foods are discussed.

Patulin is a tozic matabolite secreted by numerous *Aspergillus* and *Penicillium* species. *A. clavatus, A. giganticus A. terreas, P. claviforme P. Potulum. P. urticae. P. cycloplum and Byssochlamys nivers* have been listed to produce patulin on a variety of substrate by Shott and Bullerman (1975). Patulin has been found tn posess carcinogenic, mutagenic; antibictic and phytotoxic properties (Singh 1967, Dickens and Jones 1961, Mayer and Legotor 1969, Norsstadt and Melalla 1963. Apple sap, apple juice and and apple cider have been implicated to be naturally contaminated with this toxin in several laboratories by Harving *et al* (1973) and Scott *et al* (1962).

Sto off (1975) reported that in a survey of apple juice in U. S. markets 37 per cent of the samples tested were found to contain detectable amounts of patulin ranging from 40-440 ug/litre. Trimming of the rotred tissue from the apple has been found to substaintilly reduce the patulin concertratian by 93 the to 93 per cent regardless of the fungus strain' apple variety or iucubation temperature (Lovett *et al* 1975).

Patulin was found in fruits with spontaneous brown rot in bananas, pipeapples, graps, peaches and apricots. Frutsts and vegetabies, when artifically infected with *P. expansum P. unticae* and *Byssochlamys nived* were subsequently fonnd to contain paultin in peaches, apricots greenages bananas strawberries, honeydaw melons, tomattoes, red and green paprika. cucumbers, carrots, tomoto juice and tomato pulb (Frank *et al* 1977). There is also a report in which paultin has been found in 21 out of 23 spontaneously mouldly domestic bread samples in Finland (Tvllineu 1977).

Stott and Bullerman (1975 have reviewed the pnblic health aspects of patulin and its potential as a health hazard in fods. under a Government of india schem, we leave analysised a large number of samples of foods and feeds available in the Tamil Nadu region for the presence of various mycotoxins and we came

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across a samble of *Supari* contaminated with patulin and the details are described in this article.

MATERIAL AND METHODS

Table shows the number of samples analysed under each category. Arecanut, arecanut flakes, *seevat* and scented *supari* packets were purchased from different shops randomly on 'as is' basis. No attempt was made to make any preliminary screening of either the samples or the shops. On examination, all the samples looked normal and there was no discolouration or mould growth in any of them. The samples were ground to 50 mesh size in a head grinder, mixed and 50 g were extracted with chloroform (200ml) on a roatary shaker for 1 hr. After filtration, the chloroform layer was washed, dried over anhyd. $Na_2 So_4$ and concentrated under vacum before spotting on TLC plates. Standard TLC procedures using Silica Gel-G at a thickness of 0·25 mm were used after activation of the plates for 1hr at 110° C. A mixture of toluene-ethyl acetate 90 per cent formic acid (6 : 3 : 1) was used as the solent for the development of the plates. Pure crystalline patulin obtoined from the University of Nebraska was used as the standard. Detection of patulin was made with spray reagent phenyl hydrazine (Scott *et al* 1972) and panisaldehyde (Scott *et al* 1970). Patulin was visualised as the characteristic yellow coloured spot both in visual and U. V. lamp at the specific Rf value. Confirmation was again obtained by rechromatography with the standard xin.

RESULTS AND DISCUSSION

Out of a total number of 147 samples of different arecanut items analysed, one sample of scented *supari* was found to be contaminated with patulin. Usually scented *supari* is marketed in India in unit sized consumer packets of 2-3 each packed in wax paper. During high humidity conditions there are chances for moisture penetration and development of mould growth in the packets. Further, arecanut as such, is also susceptible for fungal invasion and spoilage unless properly dehusked and dried immediately after harvest. Scented *supari* is prepared by many comercial processes which involve boiling and steeping in concentrates of arecanut extracts called *kali*. Since various artificial flavourings, spices, colour due to fungal growth will be masked. It is quite possible that mouldy nuts can be easily diverted for the production of scented *supari* by the unscrupulous elements of the trade since it is very difficult to detect damage after processing. Such unscrupulous utilisation of mouldy nuts might cause the mycotoxins to be diffusedly present in large number of packets, since the nuts are broken into smaller particles and mixed.

There is a growing concern about the occurrence of patulin in foods

nated with this toxin. Probably, this is the first report that arecanut has also been implicated to contain this toxin naturally. The tropical climate of India with high ambient temperatures and relative humidities is congenial for fungal spoilage of foods and the consequential contamination with the mycotoxins, unless proper post harvest practices are followed. Such mouldy materials are usually sold substantially and many countries are anxious to set tolerance limits for this toxin. Norwegian and Swedish Governmenty have set action limits of fruit juices (Stoloff 1978) Patulin is also known to be resistant to thermal destruction and with stands boiling tempratures (Heatly and Philpot, 1947). So far only apples and apple products have been found to be naturally contaminated reduced prices and consumed by the poorer sections of the society. Supari is chewed, generally by vast sections of our population in rural and urban areas, by both poor as well as rich people. There is an urgent need to educate the processons and the public alike on the serious hazards of mould contaminated foods and food products.

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