

**For discussion
on 9 May 2006**

LegCo Panel on Food Safety and Environmental Hygiene

Ochratoxin A in Food

PURPOSE

This paper presents the findings of a study conducted by Food and Environmental Hygiene Department (FEHD) assessing the levels of ochratoxin A in food and the level of exposure in secondary school students.

BACKGROUND

2. Ochratoxins are a group of mycotoxins produced as secondary metabolites by several fungi of the *Aspergillus* or *Penicillium* families. The family of ochratoxins consists of three members, A, B, and C which only differ very slightly from each other in chemical structures. Ochratoxin A is the most abundant and hence the most commonly detected member. The acute toxicity of ochratoxin A is relatively low. At present, there are no documented cases of acute toxicity reported in humans. However, Ochratoxin A has been shown to be toxic to several species of animals and carcinogenic in mice and rats causing tumours of the kidney and liver.

3. Ochratoxin A is found mainly in cereal and cereal products. It is also found in a range of other food commodities, including coffee, cocoa, wine, beer, pulses, spices, dried fruits, grape juice, pig kidney and other meat and meat products of non-ruminant animals exposed to feedstuffs contaminated with this mycotoxin. It may be present in a foodstuff even when the visible mould is not seen.

4. Dietary intake represents the main source of ochratoxin A in human. Human exposure to ochratoxin A occurs mainly through consumption of contaminated crops or food derived from animals exposed to contaminated feedstuffs.

5. There were concerns about the public health significance of ochratoxin A through dietary exposure. The World Health Organization called for data from her member states, particularly those from developing countries including Asian countries, to facilitate comprehensive assessment of public health risk. To study the impact of ochratoxin A on public health in local setting, FEHD conducted a risk assessment study. Risk assessment studies are comprehensive reviews and analyses of food related hazards, including chemical and biological ones, based on scientific evidence. FEHD conducts four to five such studies each year. When we select topics for risk assessment studies, we take into account the following criteria: (a) significance on public health and whether it could address public concern; (b) whether it could address problems posed by risk managers and provide scientific support in identifying risk management options; (c) significance in public education; (d) feasibility in terms of resource and cost implications; and (e) contribution of local data to international authorities such as the World Health Organization in managing food safety problems from a global perspective.

INTERNATIONAL REFERENCE ON SAFE INTAKE LEVEL

6. The Joint Food and Agriculture Organization/World Health Organization Expert Committee on Food Additives (JECFA) has established a provisional tolerable weekly intake (PTWI) of 0.1µg/kg body weight per week for ochratoxin A.

SCOPE AND METHODOLOGY OF STUDY

7. To estimate the dietary exposure to ochratoxin A, FEHD completed a study in February 2006 which covered eight major food groups, namely cereals and cereal products, legumes, pulses and products; meat, poultry and products; chocolate and cocoa products; dried fruits; juice drinks; coffee and tea; and spices. The food consumption data was extracted from the Food Consumption Survey conducted in local secondary school students in 2000 by FEHD. A total of 287 food samples were taken for analysis by the Food Research Laboratory of FEHD.

8. The prevailing levels of ochratoxin A in Hong Kong is also compared with results of overseas studies, as well as the draft limit of 5 µg/kg proposed by the Codex Alimentarius Commission (Codex).

RESULTS

Dietary Exposure to ochratoxin A

9. The dietary exposure to ochratoxin A for average secondary school student was estimated to be 0.004 µg/kg bw/week while that for the high consumer was 0.009 µg/kg bw/week. These exposures amount to 4% and 9% of the PTWI respectively and were both well below the PTWI established by JECFA.

10. The main dietary source of ochratoxin A was “cereal and cereal products” which contributed 61% of the total exposure. This was followed by “meat, poultry and their products” which contributed 22%. “Legumes, pulses and their products” and “chocolate” each contribute 6% of the total dietary exposure. “Coffee and tea” and “juice drinks” accounted for 2% respectively while “dried fruits” only accounted for less than 1% of total dietary exposure.

Levels of occurrence of ochratoxin A in the local market in Hong Kong

11. Of the 287 food samples tested, ochratoxin A was reported in 101 items (35%). None of the food items in the subgroup “rice and rice products” had measurable levels of ochratoxin A. The concentration levels of ochratoxin A in all food items were all below the draft standard of 5 µg/kg proposed by Codex. The levels found in local spices and seasonings were low compared with data obtained in overseas studies and do not contribute significantly to overall exposure to ochratoxin.

CONCLUSIONS AND RECOMMENDATIONS

12. The low dietary exposure to ochratoxin A reported in FEHD’s study indicates that it is unlikely that food commodities available in the retail market in Hong Kong would pose adverse health risk to the consumers with respect to ochratoxin A toxicity. Dietary exposures to ochratoxin A were 0.004 and 0.009 µg/kg bw/week for average secondary school student and high consumer respectively which are all far below the PTWI established by JECFA. In particular, no measurable amount of ochratoxin A was found in our local staple foods of rice and rice products.

13. Although the risk of experiencing major toxicological effects of ochratoxin A is low, FEHD will continue to remind consumers to follow a balanced diet so as to avoid excessive exposure to contaminants from a small range of food items. Consumers will be asked to take note of the conditions of the products before purchase and not to purchase or consume foods with the presence of visible moulds, or foods that are dampened with unexpected moistures. Foods should be stored in a cool, dry place before consumption.

PUBLICITY

14. FEHD will submit the results of the report to the World Health Organization. We will also publicize the findings of the study through various channels to advise the public of the risk factors concerned and the ways to reduce the possible risk associated with ochratoxin contamination. Reports of the study will also be uploaded onto the FEHD Website (<http://www.fehd.gov.hk>) and made available at major libraries and FEHD Communication Resource Unit and Health Education Exhibition and Resource Centre.

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Food and Environmental Hygiene Department
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