Study on Acrylamide in Some Popular Foods and Trade Guidelines on Reducing Acrylamide in Food

Trade Consultation Forum

4 March 2011

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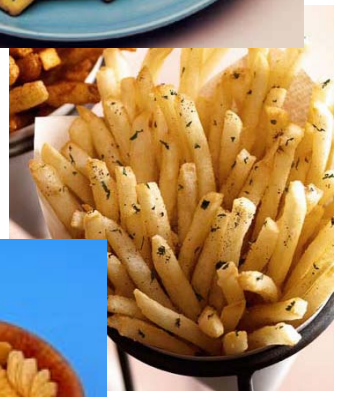
Acrylamide in Food

- In 2002, the Swedish National Food Administration found that acrylamide was present in certain types of food prepared/cooked at high temperatures
  - Plant commodities high in carbohydrates and low in protein i.e. potatoes and cereal products
- Not intentionally added to food



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Formation of Acrylamide in Food

Asparagine

+

Reducing Sugars

Maillard Reaction →

Acrylamide

≥120°C

Potatoes **Cereals**

Plant commodities high in carbohydrates and low in protein

Toxicity of Acrylamide

- **Neurotoxicity**
  - Nervous system is a principal site for toxicity in humans
- **Genotoxicity and carcinogenicity**
  - Induce gene mutation and cause cancers in animals
  - Inadequate evidence regarding the carcinogenicity to humans
  - IARC classified as “probably carcinogenic to humans” (Group 2A)

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Control of Acrylamide

- JECFA concluded that it is not possible to make a recommendation on how much of any specific food containing the substance is safe to eat
- Exposure to acrylamide should be “as low as reasonably achievable”
- No specific regulation governing the acrylamide level in food locally and internationally
- Codex has issued a Code of Practice to reduce acrylamide in food; may consider setting standards afterwards

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Acrylamide Level in Some Popular Foods in Hong Kong

Food products	No. of samples	Ranges of Acrylamide level (μ g/kg)
I. Crispy snacks	35	Not detected – 3,000
II. Fried and baked potatoes	10	15 - 890
III. Biscuits	39	32 – 2,100
IV. Breakfast cereals	6	29 - 460
Total	90	Not detected – 3,000

(Joint Consumer Council study, December 2010)

Main Findings

- Some samples, e.g. potato chips and biscuit snacks, were found to contain high level of acrylamide
- In general, rice crackers were found to contain low level of acrylamide
- The intake of acrylamide from food in local population may be a human health concern
- It is possible and practical to reduce the levels in food

Advice to the Public

- Do not over-heat food but ensure the food is cooked thoroughly
- Maintain a balanced diet i.e. eat more fruits and vegetables and to moderate the consumption of fried foods

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Advice to the Trade

- Use ingredients which are low in asparagine and reducing sugars to produce products processed at high temperature
- Do not cook food excessively i.e. cooked for too long or at too high temperature
- Avoid compromising chemical and microbiological safety of the food when taking any acrylamide reduction measures; nutritional qualities also need to remain unimpaired, together with their organoleptic properties and associated consumer acceptability

Trade Guidelines on Reducing Acrylamide in Food

- Provides recommendations to help the trade minimise the formation of acrylamide in food
  - Potato & cereal based products
- Make reference to the Codex Code of Practice for the Reduction of Acrylamide in Foods (CAC/RCP 67-2009)
- Applicable to all manufacturers and caterers
  - Producing high temperature processed potato and/or cereal based products

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General Strategies to Reduce Acrylamide Level in Food

- **Raw materials**
  - Levels of reducing sugars and asparagine
- **Recipes**
  - Raising agents and other minor ingredients
- **Food processing conditions**
  - Pre-treatment, asparaginase, thermal input and moisture control

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Consultation Exercise

- Consultation period from 10 November to 31 December 2010
  - Trade Consultation Forum on 10 November and 17 December 2010
  - Uploaded to the CFS website
- 2 submissions from trade were received

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Way Forward

- Finalised guidelines will be uploaded to the CFS website and distributed to trade for reference
- The guidelines will be promulgated in up-coming publicity events/ activities e.g. trade seminars
- CFS will continue monitor the situation

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