



食物中的麥角生物鹼

Ergot alkaloids in Food

食物安全中心

Centre for Food Safety

麥角生物鹼

Ergot alkaloids (EAs)

- 糧農組織/世衛組織食品添加劑聯合專家委員會 (JECFA)
 - ◆ 2021年評估麥角生物鹼，確立
 - ◆ 每日可容忍攝入量(TDI)，及
 - ◆ 急性毒性參考劑量 (ARfD)
- FAO/WHO Expert Committee on Food Additives (JECFA)
 - ◆ Evaluation of EAs in 2021, established
 - ◆ a tolerable daily intake (TDI), and
 - ◆ acute Reference Dose (ARfD)



麥角生物鹼

Ergot alkaloids (EAs)



- 食品添加劑聯合專家委員會(JECFA)
 - ◆ 一些地區的兒童的膳食攝入量超過了TDI
 - ◆ 一些地區攝入量高的兒童及成年人超過了ARfD
 - ◆ 可能有健康問題
- FAO/WHO Expert Committee on Food Additives (JECFA)
 - ◆ dietary exposures of some children in some areas exceeded the TDI
 - ◆ dietary exposures for high consumers of children and adults in some areas exceeded the ARfD
 - ◆ may indicate a health concern



什麼是麥角生物鹼? What is Ergot alkaloids?

- 由麥角菌屬真菌產生霉菌毒素
- **mycotoxins** produced by fungi in the genus ***Claviceps***
- 真菌取代發育中的穀粒
 - 變成麥角 (含生物鹼)
 - 田間感染
- Fungus replaces the developing grains
 - with alkaloid-containing ergots
 - infected in fields

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Ergot alkaloids

- 收割時，穀物帶有麥角
 - 穀物及穀類食品便可能會受污染
- If ergot are harvested together with the cereal grains
 - the grains and their products can also be contaminated

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Ergot alkaloids

- 受影響的穀物
 - 黑麥、小黑麥、大麥、小麥、燕麥、高粱、珍珠粟/御穀、玉米
- 麥角在收割前形成
 - 麥角生物鹼含量在儲存期間變化不太
- Cereal affected
 - rye, triticale, barley, wheat, oats, sorghum, pearl millet, maize
- Ergot forms before harvest
 - EAs levels unchange during storage

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Ergot alkaloids

- 中世紀歐洲
 - 食了受麥角生物鹼污染的穀物、麩粉或麩包
 - 引發嚴重流行病
- The Middle Ages in Europe,
 - consumption of EA contaminated grains, flour or bread
 - caused severe epidemics

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Ergot alkaloids

- 患者
 - 血管收縮，感到劇痛
 - 會因壞疽以致失去手指、手、腳，甚至四肢
- Intoxicated people suffered from
 - intense pain resulting from vasoconstriction
 - subsequent gangrene with loss of fingers, hands, feet and even entire limbs

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Ergot alkaloids

- 據說受影響的病人被“聖火”所吞噬
 - 他們的四肢像炭一樣，燒灼痛
- 聖安東尼醫院提供最有效的治療
 - 病狀被稱為“聖安東尼之火”
- Affected patients were said consumed by “holy fire”
 - the charcoal-like appearance and burning pain of gangrenous limbs
- The hospitals of St Anthony provided the most effective treatment
 - The condition became known as “St Anthony's Fire”

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Ergot alkaloids

- 病狀稱為麥角中毒
- 中毒事件今天已少見
 - 因為在去除穀物雜質和磨穀過程中
 - 大部分麥角已被清除
 - ✓ 生物鹼在穀類食品含量低
- Condition is known as ergotism
- Ergotism is rare today
 - because the grain cleaning and milling processes
 - most of the ergot removed
 - ✓ only low levels of alkaloids remain in the grains and their products

麥角生物鹼

Ergot alkaloids

- 食品法典委員會《預防並減少穀類中霉菌毒素污染操作規範》
 - 有關麥角和麥角生物鹼的附件
 - 建議農民和生產者遵從優良務農規範和優良製造規範，以減少穀物受麥角菌感染和麥角生物鹼污染
- Codex Code of Practice for the Prevention and Reduction of Mycotoxin Contamination in Cereals
 - with an annex for ergot and EAs
 - advises farmers and producers on GAP and GMP to reduce *Claviceps* infection and EA contamination of cereals

給業界的建議

Advice to the trade

- 業界(例如農民、飼料生產商、食物製造商)
 - 遵循《預防並減少穀類中霉菌毒素污染操作規範》
 - 例如利用分離技術清除穀物的麥角
 - 選購自信譽良好的供應商
- Members of the trade (e.g. farmers, feed and food manufacturers)
 - follow Codex's Code of Practice
 - such as using separation techniques to clean the grains in order to remove ergots from grains
 - source from reputable suppliers





完
End
