

ACRYLAMIDE IN FOOD

INTRODUCTION

Acrylamide (AA) is an organic molecule with low molecular weight and high solubility in water. It can be formed in starchy foods cooked at high temperatures, above 120 °C, using technical processes, such as fried, baked or roasted. Moreover AA is recognized as a carcinogenic, neurotoxic and genotoxic substance to humans.

MATERIAL AND METHODS

KEY WORDS: *acrylamide, acrylamide in food, acrylamide reduction, acrylamide formation...*

SEARCH: *Scopus and Science Direct*

DATABASE: *Knovel*

WEB PAGES: *AECOSAN, FDA and EFSA*

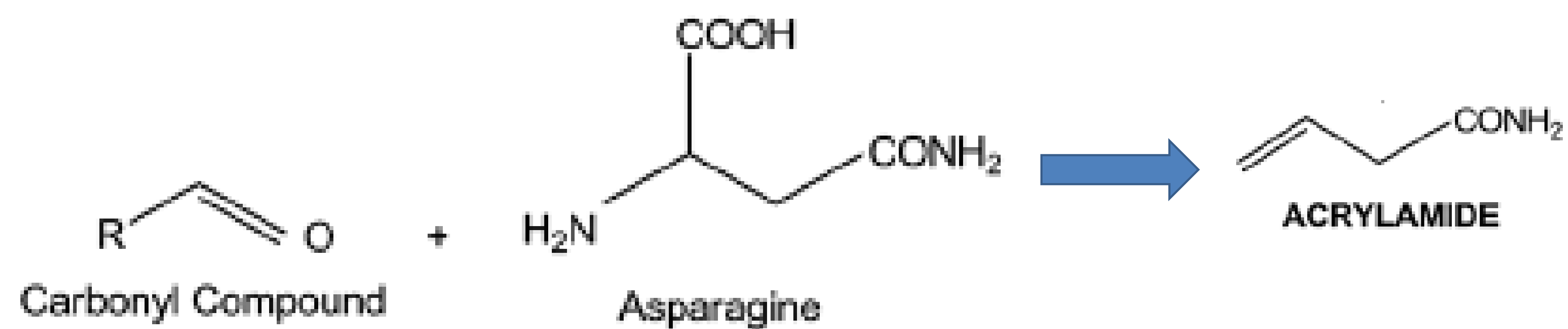
FOUND ARTICLES: 103

SELECTED AND READED ARTICLES: 34

RESULTS AND DISCUSSION

FORMATION IN FOOD

MAILLARD REACTION



ALTERNATIVE PATHWAYS

Acrolein
Oxidized lipids
3-aminopropionamide

ACRYLAMIDE PRESENCE IN FOOD



STRATEGIES FOR REDUCING AA IN FOOD

Agronomic methods

- Controlling reducing sugars and asparagine levels during cultivation

Final product

- Consumer guidance

Processing methods

- Heat treatment and moisture conditions
- Asparaginase
- Pre-treatment
- Finished product colour
- Texture and flavour

Recipe methods

- Piece size
- pH
- Fermentation
- Raising agents
- Addition of other ingredients

CONCLUSIONS

- The most important pathway in AA formation is the Maillard reaction, but alternative pathways are relevant too.
- Prevention and mitigation strategies are collected and recognized globally.
- Health authorities have determined a recommended intake levels, but this values are not recognized at the legislative level.

REFERENCES

http://aesan.msssi.gob.es/AESAN/web/cadena_alimentaria/subdetalle/qui_acrilamida.shtml

Jackson, L., Al Taher, F. 2009. Processing Issues: Acrylamide, Furan and Trans Fatty Acids.

Food	Medium value 2009 (µg/kg)
Potatoes	
a) Potato chips	326 - 328
b) French fries	689 - 693
Bread	
a) Roast bread	219 - 223
b) Soft bread	27 - 37
Cereals	
a) Breakfast cereals	132 - 142
b) Children cereals	55 - 70
Biscuits	
a) Crackers	195 - 208
b) Children cereals	88 - 108
Coffee	
a) Roast coffee	225 - 231
b) Instant (soluble) coffee	591 - 595