An observational study on the associate risk among biogenic amines in food and beverages

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LACKS ON BIOGENIC AMINES (BAs)

- Only histamine is regulated for some fishes and fishery products
  In vitro studies have confirmed the synergistic effect of other amines in potentiating histamine and tyramine activity on the human body [1]
- Limited data on BAs content for many matrices especially vegetables
- Elimination of food containing toxic amines from diet is the one available option for sensitive people.

ECONOMICAL BENEFITS

- The BAs profile implementation can potentiate the global quality of many classes of foods and beverages opening a new market sector
- The quality improvement via the monitoring on BAs may increase ethical and sustainable practices in food production
- Hygiene and control of foods will face new strategies to maintain higher standards

DATA ON POPULAR READY TO EAT (RTE)

- Following the aims of this project, the matrices analysed come from people' indication, market and bibliographical research [2]. Here are advanced some hypothetical combinations for snacking suitable both for adults and children (table 1).

AIMS

- To Contribute creating a huge dataset where food matrices are mcnitored.
- To have an insight of people dietary habits and BAs inclusion in their lives for BAs to become more included on labels for a more reliable consumers' information
- To make a point on also the beneficial roles of BAs

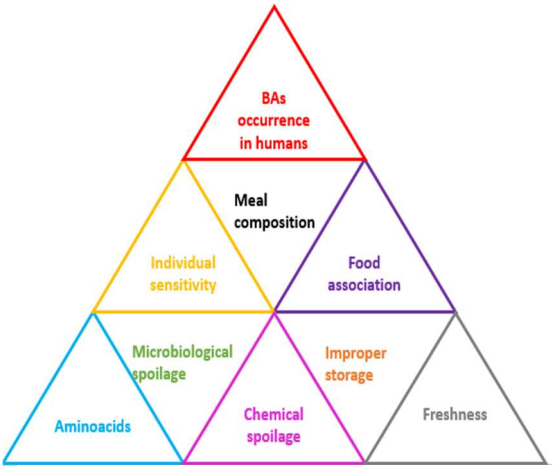

Figure 1 Ways through which BAs interact with human beings.

NOAEL* for tyramine is 200 mg/Kg in a single oral administration for healthy subjects
For histamine NOAEL is 50 mg/Kg
EFSA, 2011 [4]
*No observed adverse effect limit

Table 1 Biogenic amines in some food (mg g^{-1}) and beverages (mg ml^{-1}).

Biogenic amines (mg)	Edamer Cheese 25 g (1 slice)	Milano type Salami 10 g (2 slices)	Bresaola 20 g (2 slices)	Hazelnut chocolate cream 20 g (2 teaspoon) [5]	Infant soft cheese 21 g (1 unit)	Probiotic drink for children 100 ml (1 unit)	Beer 200 ml (1 unit) [6]	Red wine 100 ml (1 unit) [7]
ethylamine	0.045	n.d	n.d	n.d	n.d	n.d.	n.d	7.9
agmatine	0.1	0.032	n.d	n.d	0.053	n.d	n.d	n.d
putrescine	0.025	0.021	0.032	0.3	n.d	0.23	44.5	19.7
cadaverine	0.024	0.01	0.02	n.d	0.021	n.d	n.d	0.27
histamine	n.d	n.d	n.d	0.43	0.022	0.10	9	7.27
serotonine	0.03	0.01	n.d	n.d.	0.023	n.d	n.d	n.d
tyramine	0.025	0.019	0.038	0.62	0.021	0.10	32.5	13
spermidine	0.032	0.01	n.d	0.058	0.024	0.11	20	n.d
dopamine	0.089	0.01	n.d	n.d	0.068	n.d	n.d	n.d
spermine	0.033	0.01	n.d	0.1	0.026	n.d	n.d	n.d
Total BAs	0.403	0.122	0.09	1.51	0.26	0.54	106.2	48.14

n.d.: not detectable

MATERIALS & METHODS

BAs contents were traced according to Martuscelli et al. 2005 [3], by HPLC method after acid extraction and derivatization of samples with dansylchloryde.

CONCLUSIONS

Although BAs are fundamental for human growth, they might be toxic. For this reason, the construction of a definitive risk threshold, results in a complex task.

We should start to make consumers and food producers aware of their role in BAs accumulation.

Kids and elders are simultaneously the ones most at-risk and the ones who require a higher nutritive demand.

Safeguarding them along with other subjects should be a priority in food safety.

RESULTS

These results show how much BAs interact with us and how much this depends on our dietary choices (tab1). This study is focused on finding correlations between foods indicated by people. Introducing the communication about BAs can provide consumers with accurate knowledge to select foods appropriate to their health or modulating rich BAs foods and free ones. Even if the single food intake cannot represent a direct problem, consumers may unconsciously suffer from limited or extended allergies or other symptoms caused by erroneous associations.

We can no longer fail to consider the importance of some BAs as spermine and spermidine in the cellular renovation. They are commonly introduced with meat

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