**Histamine Intolerance**

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**Introduction:** Histamine belongs to the group of biogenic amines, such as tyramine, putrescine, cadaverine and others. It is built by decarboxylation of the amino acid histidine in the human body, but also in many different food due to bacterial activity. In the body, it is an important mediator of inflammation and allergic reactions. In healthy persons, histamine is degraded by the enzymes diaminoxidase (DAO) and to a smaller extent by N-methyltransferase. Approximately 1% (~80% women) are not able to degrade histamine sufficiently and develop allergy-like symptoms, known as histamine intolerance (HIT).

**Materials and methods, experimental design, other methodological information:** A literature survey has been done in order to provide an overview of the knowledge of the last 10 years, including pathogenesis, symptoms and diagnostics, but the main focus lies on the nutritional therapy. The aim was to find out how the histamine-free diet has to be carried out, how effective it is and if there is an improvement due to medication and/or supplementation.

**Results and discussion:** Histamine intolerance results from an imbalance of histamine accumulation and the histamine degrading potential, due to low activity or inactivity of DAO and/or an increased availability of histamine (due to high intake or endogenous overproduction caused by different diseases). The histamine overload leads to numerous symptoms concerning amongst others the central nervous system (headache, nausea), the gastrointestinal tract (cramps, diarrhea), the skin (pruritus, flush), the respiratory tract and the cardiovascular system (arrhythmia, anaphylaxis). As the symptoms resemble those of an allergic reaction and often are very unspecific, they are often misinterpreted.

Histamine intolerance is not included in the WHO International Classification of Diseases (ICD) and there are no official guidelines regarding diagnosis and therapy. The recommended diagnostic tools should include anamnesis, biochemical parameters (DAO activity, histamine level) and the exclusion of related diseases. A double-blind placebo-controlled food challenge (DBPCFC) would be the golden standard, but as severe reactions could occur (up to an anaphylactic shock), it often is avoided.

Regarding therapy, an elimination phase of 3 to 6 weeks is recommended, when all foods should be avoided which contain histamine or other biogenic amines, which are able to release histamine from the mast cells (histamine liberators, e.g. citrus fruit) or block DAO. Alcohol and several common drugs are also able to liberate histamine or block DAO and should therefore be avoided. Histamine-rich food includes food underlying microbial fermentation, long ripening or storage, e.g. long-ripened cheese, cured meat, fish, sauerkraut, salami and vinegar. The histamine-free diet results in a decrease of the accumulated histamine in the mast cells.

After the elimination phase, a test phase should be carried out in order to identify the individual histamine tolerance level, followed by a long term diet low in histamine and biogenic amines. Symptoms can be reduced by antihistamines. Supplementation of DAO in form of capsules before the intake of a histamine-rich meal also seems to mitigate symptoms, but the data is insufficient. Vitamin C and B6 administration is discussed to increase DAO activity.
Conclusion: Unfortunately, there are still too little studies on histamine intolerance to completely understand the clinical picture, triggering factors and diagnostic tools. Patients would benefit from evidence-based guidelines for diagnostics and therapy.

References:


Steneberg A. Biogene Amine – Ernährung bei Histamin-Intoleranz. Umwelt & Gesundheit 2007; 2; 47-56