Histamine in Food

I wish that I could give you an exact list of histamine levels in food, but it is a complicated topic! In this article, you will learn about histamine formation, the related diamine compounds and the reasons why there is so much variability.

Histamine is a By-Product of Bacteria

When bacteria grow in food (spoilage and fermentation), several new compounds form. Histamine is one of these compounds.

Food fermentation: Fermented foods include alcoholic beverages, aged cheese, sausages, sauerkraut, etc. During fermentation, bacteria/yeasts are intentionally added to food and allowed to grow. The resulting compounds change the taste/texture of the food and are considered to have health benefits. In addition to these desirable compounds, histamine/diamines may also form. However, many food fermentation bacteria are not capable of producing histamine, so not all fermented foods are a problem. Unfortunately, we don't have enough information to say which foods are a problem, so the low histamine diet restricts all fermented foods.

Food spoilage: Unintentional contamination with bacteria leads to food spoilage. Histamine toxicity is a food poisoning illness when a food develops very high levels of histamine/diamines. Histamine/diamines can form in leftover food. Minimizing bacteria growth during food storage will lower histamine formation. You can read more about this in the Practical Guide to the Low Histamine Diet.

Histamine May Form Under Other Circumstances

Some fruit and vegetables (e.g. tomato, spinach, etc.) are said to be high in histamine. Bacteria growth may not account for this. These levels change as the fruit/vegetable matures. The levels are thought to increase over time, but one study indicated that they could also decrease.

Related Diamine Compounds

Histamine is one of several diamines that form in food (e.g., cadaverine, putrescine, spermidine, etc.). We talk about a low histamine diet, but it is the total diamine content that we need to consider because they are all broken down by the diamine oxidase enzyme in the digestive system. Currently, we don't have a widely accepted technique the measure histamine/diamine.

Exact Food Lists are Not Possible

Exact food lists are difficult, because there is not enough research and histamine/diamine levels are variable. The technology measuring food histamine used in the 1970/80s studies is likely outdated, so this brings the results into question. Currently, we don't have a widely accepted technique the measure histamine/diamine. Even if this technology was available, there are too many variables to have exact histamine/diamine food lists (e.g., type of food, storage conditions, type of bacteria). If we measured fifty samples of a food, the diamine content would vary.