

## Statement

October 21, 2021

Valid two years from date of issue

### To whom it may concern

### Viniflora® cultures do not produce biogenic amines (histamine)

Thank you for your inquiry into Chr. Hansen's products.

Biogenic amines are formed by the microbial decarboxylation of certain free amino acids (through carboxy-lyase enzymes).

The production of biogenic amines in foods is dependent on:

- The intrinsic properties of the micro flora: Some bacterial species are capable of biogenic amines production.
- The physical and chemical properties of the wine itself. The available substrate (i.e. free amino acid concentration), pH, temperature are all factors that can influence the build-up of biogenic amines.

They represent a potential food safety in fermented food and beverages.

All Chr. Hansen's wine cultures Viniflora® have been tested for the production of histamine, tyramine and other biogenic amines.

We are pleased to answer you that all wine cultures were found negative for biogenic amines production, as the strains selected do not contain the carboxy-lyase enzymes for the relevant amino acids found in wines, in particular histidine, tyrosine, arginine and show extremely low level of carboxy-lyase production for the remaining amino acids.

The absence of biogenic amines production is specifically related to Chr.Hansen knowledge regarding microorganisms and the process of bacteria selection, genetic identification, and analysis of metabolic pathways.

If you have further questions, please contact us.

Yours sincerely

Chr.Hansen A/S - Food Cultures and Enzymes

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***Electronically generated, therefore not signed***

DKLUSI/FRACB/Biogenic amines in Viniflora product range/Nov 2021/1:1

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