RESOLUTION OIV-OENO 594A-2019

REDUCTION OF INDIGENOUS MICROORGANISMS IN GRAPES AND MUSTS BY DISCONTINUOUS HIGH PRESSURE PROCESSES (HIGH HYDROSTATIC PRESSURE – HHP)

THE GENERAL ASSEMBLY,

IN VIEW of article 2, paragraph 2 ii of the Agreement of 3 April 2001 establishing the International Organisation of Vine and Wine,

ON THE PROPOSAL of the "Microbiology" expert group,

CONSIDERING the importance of new physical preservation technologies able to protect the sensory properties of grapes and also allowing for a reduction in SO2 levels,

CONSIDERING that new fermentation biotechnologies like the use of non-Saccharomyces yeasts or the application of co-inoculations with lactic-acid bacteria and yeasts to perform simultaneous malolactic and alcoholic fermentations can be promoted by the reduction of initial counts of indigenous microorganisms in grapes,

CONSIDERING the work of the "Technology" and "Microbiology" expert groups,

CONSIDERING that high hydrostatic pressure (HHP) can be applied to reduce wild yeast and bacteria populations in grapes and musts,

CONSIDERING that this technique (HHP) involves a non-thermal process (also colloquially denominated cold pasteurisation) with little repercussion on the sensory properties of food. Adiabatic compression increases temperatures by 2-3 °C/100MPa so even strong treatments of 500 MPa only increase temperatures by 10-15 °C. Moreover, this temperature is reduced during the expansion phase, and also can be controlled by supplementary refrigeration,

CONSIDERING that HHP is the use of pressure levels higher than 150 MPa (1500 bar), in a discontinuous process, by means of a fluid able to transfer the pressure (usually water). Death of microorganisms is mainly produced by the breakage of the cell envelopes (cell wall and membrane) but also the nuclear membranes in yeasts and some other cell structures are affected,

CONSIDERING that it has been demonstrated that the energy produced by HHP is not enough to break covalent bonds, therefore most pigments, aromatic compounds and flavoring molecules remain unaffected. HHP produces a reduction of indigenous microorganisms, preserving sensory quality,

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CONSIDERING that the implementation of wider industrial tests would be convenient to ensure large-scale use,

CONSIDERING that the positive effects of the HHP treatments accelerating the extraction of phenolic compounds (tannins and pigments) have also been described,

DECIDES, on the proposal of Commission II "Oenology", to introduce the following oenological practices and treatments into part II, chapters 1 and 2 of the International Code of Oenological Practices,

Part II

Chapter 1: GRAPES

Chapter 2: MUSTS

TREATMENT BY DISCONTINUOUS HIGH PRESSURE PROCESSES

Definition:

Process that consists in the reduction of indigenous organisms in grapes and musts by the use of discontinuous high pressure processes, with pressures higher than 150 MPa (1500 bar).

Objectives:

- To reduce the microbial loads of indigenous microorganisms, especially yeasts,
- To reduce SO2 levels used in winemaking,
- To accelerate maceration in red winemaking.

Prescriptions:

The high hydrostatic pressure (HHP) technique relates to the use of pressure levels of higher than 150 MPa (1500 bar) during a discontinuous process.

The elimination of yeasts in grapes and musts requires pressure levels of 200-400

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MPa.

The elimination of bacterial cells needs pressure levels of 500-600 MPa.

The treatment time range is 2-10 minutes.

If necessary, the increase in temperature may be controlled by supplementary refrigeration.

The increase in temperature and the techniques used should not entail any alteration in the appearance, colour, flavour or taste of the wine.

OIV Recommendation:

Accepted.

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