Vinifera master thesis abstract

Thesis title:
Comparison between six different Carboxymethylcelluloses used as enological products for the tartaric stabilization of red wines

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Confidential: ☐ **Yes** **x No**

Abstract (max 300 words)

Topic position & objectives: The carboxymethylcellulose (CMC) is a cellulose derivative authorized in white and sparkling wines production as a tartaric salts crystallization inhibitor. Previous studies report negative effects of the product when added to red wines; more specifically, it has been seen that the CMC decreases the content of total phenols, flavonoid and non-flavonoid phenols, reducing the colour intensity; it interacts with the phenolic compounds, promoting turbidity and colorant matter precipitation.
Methods: In order to evaluate if these effects characterize all the red wines when in contact with the product, we studied in detail the impact of six different CMCs, coming from six Portuguese oenological companies on the same Portuguese red wine, Castelão variety. The research has been focused on the evaluation of the wine responses in terms of tartrate and colouring matter stability, turbidity, phenolic compounds, tannins' composition, tannin power, chromatic and sensory characteristics.
Results: CMC resulted as a strong inhibitor of tartaric salts crystallization, even after 5 months from the addition. It generally reported an increase in the colour intensity of the wines, as such as in the coloured anthocyanins concentration. Therefore, the CMCs treated wines revealed a stronger and more powerful colour. No colouring matter precipitation occurred. The total phenols concentration of the CMCs added samples did not completely differ from the control wine, as such as the tannins' composition in terms of monomeric, oligomeric and polymeric fractions content. In terms of sensorial quality, the CMC treated wines did not reveal any important differences compared to the control.
Main conclusions: the study revealed that the CMC represents a valid sustainable enological alternative to stabilize the red wines in terms of tartaric salts crystallization. The positive results achieved are in opposition with the ones obtained in most of the previous studies, opening new prospective and scenarios concerning the effects of the CMC utilization on red wines.

Keywords (5): Carboxymethylcellulose, Tartaric stabilization, Red wines, Phenolic composition, Chromatic characteristics

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