

Title: COMBINED EFFECT OF RESIDUAL FUNGICIDES ON THE ALCOHOLIC FERMENTATION IN WINE.

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Summary:

Serra Gaucha is the region with the highest production of grapes for wines of Brazil, but its climatic conditions favor fungal diseases, causing the application of fungicides on grape. Waste of these products remain along the winemaking and can influence the fermentative oenological process. The object of this study was to evaluate the kinetic fermentation of a mash in the presence of different fungicides alone and in combination. Commercial fungicides were tested: Kumulus (80% sulfur) Polyram (active ingredients metconazole and pyraclostrobin) and Captan, added directly to the wort prior to yeast inoculation commercial *S. cerevisiae*. The fermentative kinetics were monitored by CO₂ formation at 12h intervals. The experimental design of simplex-centroid mixtures was used to evaluate the influence of the mixtures formed by fungicides. The design for three components consisted of seven trials with three replications in all experimental points (vertices, sides and center point). As control treatment, was conducted additional test with six replications where no fungicide was added to the wort. The upper limits are from review studies on residual pesticides in musts, being defined as 3 mg kg⁻¹. The must used was derived from grapes coming from the experimental vineyard station IFRS-Campus Bento Gonçalves, where phytosanitary procedures are known. The statistical program Statistica 7.0 was used in the planning of mixtures and data analysis. The results showed that the fungicides and combinations there of affect in different ways on different stages of fermentation. Kumulus, the presence of sulfur in its composition, accelerated fermentation kinetics, and the fermentation was faster than half of fermentation onwards. Polyram had influence at the end of fermentation where the fermentation kinetics was reduced in the past 48 hours. Captan interfered dramatically in the fermentation compared to control and other treatments, and the fermentation process was greatly changed from the latency time (about two times higher than the other) and lower CO₂ content formed at the end of the process. In the final stage of fermentation, with a larger amount of ethanol and minor nutrients in the medium was observed synergism between Kumulus and Captan, promoting significant reduction in the rate of fermentation.

Keywords: Fungicides, synergism , alcoholic fermentation.

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