

USE OF CHEMICAL PROBES TO DETECT CELLULAR TARGETS FOR PHENOLIC ACIDS IN WINE LACTIC ACID BACTERIA

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Phenolic compounds are a class of important compounds in wine from a sensorial standpoint and also because of their antioxidant and antimicrobial properties. Previous studies showed that phenolic acids (particularly p-coumaric acid) can have an inhibitory effect on wine lactic acid bacteria [1]. Although phenol-derived compounds are known to act at the cytoplasmic membrane level, the mechanism of toxicity of phenolic acids on wine lactic bacteria is not yet fully understood. Chemical probes have been used as indicators of cellular lesions at particular structures or functions [2]. In this work, several chemical probes (sodium chloride, penicillin G, rifampicin, lysozyme, actinomycin D, pyronin Y, chloramfenicol and sodium deoxycholate) were used to evaluate the effect of p-coumaric acid on different cell structures of *Lact. hilgardii* 5 and *O. oeni* VF. Minimum Inhibitory Concentrations (MIC) were determined in liquid MRS/TJ medium for each probe (for each strain). Subsequently, experiments were done to assess cell recovery after being exposed to p-coumaric acid in liquid MRS/TJ medium supplemented with chemical probes at MIC and at 50% MIC. The obtained results indicate that the presence of sodium chloride, chloramfenicol and rifampicin considerably delayed cellular growth (comparatively to the control assay). These results suggest that besides affecting the cytoplasmic membrane, p-coumaric acid could also interfere at protein synthesis level.

REFERENCES

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