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PS1-05

FUNGICIDES AND WINE FERMENTATIONS: EVIDENCES OF COMPLEX EFFECT ON THE WINE MICROBIOTA

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In this work we investigated the repetitive stuck fermentations in a winery located in the Apulian region, South of Italy. Apart from microbial starters and the presence of spoilage microrganisms, a panel of pesticides formulations used in the pest management of the winery vineyards were considered. One of the fungicides tested against *Saccharomyces cerevisiae* was identified as a potential inhibitor of yeast growth. The selected commercial preparation contained metalaxil-M and folpet as the principal active ingredient. Monitoring the weight loss during alcoholic fermentation, we demonstrated that the fungicide preparation, at a dosage corresponding to the half of the EU limit in grapevine, compromised the beginning of alcoholic fermentation in wine (e.g. 10 fold reduction of CO_2 released in the first two days). Furthermore, our findings were confirmed on eight strains of *S. cerevisiae* of which six strains are commonly used in oenology and two autochthonous strains from Apulian wines, suggesting that sensivity to the studied fungicide is not a strain-specific character. In order to improve our understanding on the effect on the wine microflora and, consequently, on wine quality and safety, we tested the effect of the selected fungicide on a panel of strains belonging to species of oenological interest such as non-*Saccharomyces* yeasts, and malolactic bacteria. No inhibition was observed on malolactic bacteria. In general, the pesticide inhibited also non-*Saccharomyces*. However, non-*Saccharomyces* strains able to grow when exposed to the fungicide were observed. The addition of the selected fungicide formulation increased the risks related to i) so called õwine diseasevÑand ii) biogenic amines formation in presence of producer strains. Our results, for the first time, demonstrated that fungicide preparations might cause a clear inhibition of the beginning of alcoholic fermentation. Overall, the use of fungicide in viticulture/enology should be properly managed, even considering the risks of economic losses due to stuck fermentations.

PS1-06

MOLECULAR CHARACTERIZATION OF FUNGAL BIODIVERSITY AND EARLY IDENTIFICATION OF FUNGI ASSOCIATED WITH OIL PALM DECAY, PARTICULARLY GANODERMA BONINENSE

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The oil palm, *E. guineensis Jacq.*, is the main oleaginous plant cultivated in the world. The fungi *Ganoderma boninense* has been identified as the main harmful phytopathogen of these

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cultures in South-East Asia. It is responsible of major economic losses due to weakening, necrosis and death of the host plant. This fast-growing agro-industry in the tropical belt is now confronted to the emergence of *Ganoderma* in Cameroon. However, the incidence and epidemiology of the disease, as well as the species involved, differ from what has been observed in Asia. This research project aims to characterize the diversity and the genetic structuration of aggressive *Ganoderma* species found in plantation sites in Cameroon, using the ITS, nuc-SSU, nuc-LSU and mt-SSU molecular markers for phylogenetic analysis, complemented by a morpho-anatomic description of the samples. During this project, 43 samples of *Ganoderma spp.* have been collected on oil palm trees in 5 plantation sites of the SOCAPALM group in Cameroon, from which 40 pure culture isolates have been produced. A phylogeny based on the molecular marker nuc-SSU data of our samples has been reconstructed.

PS1-07

EVALUATION OF ANTIBIOTIC-RESISTANT ENTEROCOCCI IN CONSTRUCTED WETLANDS SYSTEM FOR WASTEWATER REUSE IN AGRICULTURE

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Constructed wetlands (CWs) are engineered systems which reproduce the natural water remediation processes occurring in nature in order to reuse the final effluent for agricultural purposes. The aims of this study were to monitor the sanitation efficiency of a full-scale horizontal sub-surface flow CW combined with UV treatment and to evaluate the Antibiotic-Resistance (AR) in enterococci, isolated, both in influent and in three different effluents, in 12 consecutive months. For this purpose, the microbiological indicators *Escherichia coli*, total coliforms and enterococci were monitored by plating counts. Moreover, the levels of enterococci sensitivity to different antibiotics molecules were measured using microdilution assay. The results showed that the levels of microbiological indicators were significantly lowered in water samples collected downstream the CW system, compared to the water samples collected upstream the CW system. While the CW system allowed an efficient reduction in *E. coli* population, reaching a final value below the Italian limits required for wastewater reuse in agriculture, a moderate reduction was achieved for enterococci count. The taxonomic identification of isolates reveled the dominance of the species *Enterococcus faecalis* both in influent ad effluents, followed by *Enterococcus faecium* and *Enterococcus hirae*. Most of enterococci isolates showed high AR to most of the tested antibiotics and variable sensibility to glycopeptides and beta-lactam both in influent and effluent samples. Strong differences were also observed among sampling times with a higher AR levels monitored in the period from April to June. In conclusion, while the CW system considered in the present study is suitable for the water reuse in agriculture, according to the Italian legislation, the presence of enterococci at high concentrations underlined the persistence of this bacterial group in water environment with a potential risk to serve as a genetic reservoir of transferable AR, a matter of concern for public health.