Comparative study of the effect of acetic acid in cell death induced by ethanol in *Dekkera bruxellensis* ISA 1791, *Saccharomyces cerevisiae* ISA 1000 and *Zygosaccharomyces bailii* ISA 2270

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This work aims to study cell death induced by ethanol in *D. bruxellensis* ISA 1791, *S. cerevisiae* ISA 1000 and *Z. bailii* ISA 2270 and evaluate the effect of acetic acid in the death process. For such purpose exponential cells were incubated in rich medium (pH 3,5, at 26 °C) with ethanol (12.1%, v/v), acetic acid (16.6 mM) or with both compounds. Loss of proliferative capacity was assessed by colony forming unit counts. Changes of mitochondrial membrane potential (ΔΨm) and loss of membrane integrity were evaluated by double staining with the fluorescent probes 3,3’-dihexyloxycarbocyanine iodide and propidium iodide and analysed by flow cytometry. The results show that acetic acid does not induce death in none of the species studied. Ethanol induces cell death being the lowest and highest resistance displayed by *S. cerevisiae* and *Z. bailii*, respectively. Treatment with both compounds also induces cell death and *D. bruxellensis* and *Z. bailii* presented lowest and highest resistance, respectively. Comparison of the results obtained with ethanol treatment with the ones obtained with both compounds show that acetic acid prevents loss of proliferative capacity and membrane integrity in *S. cerevisiae* and *Z. bailii*. Ethanol–induced cell death is not associated to a significant decrease of ΔΨm, and acetic acid appears to have no effect on the mitochondrial depolarization.


Pitfalls and successes in phage therapy: the involvement of the UMinho Team in the European Project Phagevet-P

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PHAGEVET-P is a European Project coordinated by the University of Minho that aims at evaluating the potential use of bacteriophages as alternatives to antibiotics in poultry production, focusing on two of the most important foodborne pathogens, *Salmonella* and *Campylobacter*. Main innovative aspects of this project are the concern on the safety of the bacteriophages and respective hosts, including the confirmation of using non-temperate bacteriophages, the characterization of bacteriophages comprising the study of homologies between bacteriophages and host bacteria to ensure the absence of bacterial toxin encoding genes, the monitoring of bacteriophage-resistant mutants in the environment, the scale-up of experimental trials to large batches of animals in rearing environments. One of the major challenges presently felt by the team of the University of Minho is related to the maintenance of the characteristics of bacteriophages and their hosts, the probability of contaminations and/or occurrence of mutations during the experimental work. The present work describes the main drawbacks and difficulties faced by the team and the efforts made to overcome these problems. It also presents the state-of-the-art on this subject and some considerations about the need of a battery of tests to ensure the safety and quality of a bacteriophage-based product towards phage therapy.