TOXIC EFFECTS OF WEAK ACIDS ON SPOILAGE YEASTS
PAMPULHA, M.E.1, BRITO, H.M.1, LOURERIO-DIAS M.C.2 & LOUREIRO, V.1
2 Lab. de Microb., Inst. Gulbenkian de Ciência, Lisboa, Portugal.

Spoilage yeasts are responsible for considerable economical losses in the food industry. Microbial inhibition by the use of preservatives is a current way to control and preserve foods and beverages. Some yeasts, however, have a great resistance to acid preservatives used in industry: sorbic, benzoic, acetic acids. They can develop an adaptative process to these preservatives which can significantly increase their resistance and subsequent ability to grow.

The purpose of the present research is to study the performance of acid resistant species in order to understand the underlying resistance mechanisms.

We report a screening of about 200 strains, isolated from spoiled foods, in which the yeasts are grown in a medium supplemented with sorbic or acetic acids, in increasing concentrations.

Growth parameters are compared and the results are discussed having in mind a previous study which reports the effect of acetic acid on growth parameters of a deficient mutant of Saccharomyces cerevisiae.

We submit that the main effect of these weak acids may be ascribed to the higher fraction of the energy consumed for maintenance purposes (probably to keep the internal pH neutral). On the other hand, a significant strains dependent sensitivity to weak acids, was observed. This indicates that generalizations about preservatives effectiveness must be made with caution.

(supported by CMII/INQ)

EFFECT OF K,a ON THE PRODUCTION OF CYTOCHROME b5
BELO, I.M.* & MOTA, M.

Biological Engineering Department, University of Minho, Largo do Pasco, 4719 BRAGA CODEX PORTUGAL

Oxygen transfer to the fermentative media is an important factor on the production of high added value metabolites by aerobic cultures. This is the case of recombinant proteins.

To study the effect of the volumetric oxygen transfer coefficient (K,a) on the production of cytochrome b5, some batch fermentations were carried out with Escherichia Coli TBI, which is a genetically modified bacteria with the plasmid pUC13. This vector contains the gene for the cytochrome expression and confers bacterial resistance to ampicillin.

A 2L fermenter filled with 1.5 l of medium with 0.1 g/l of ampicillin was used. In order to obtain different values of K,a, the stirring and aeration rates were varied from 100 to 300 rpm and 0.3 to 1 vvm, respectively.

The results showed the existence of a linear correlation between K,a values (70 to 189 hr⁻¹) and final cytochrome b5 concentration.