ASSESSMENT METHOD OF THE EFFECTS OF NANO-OXIDES WITH USE OF YEAST

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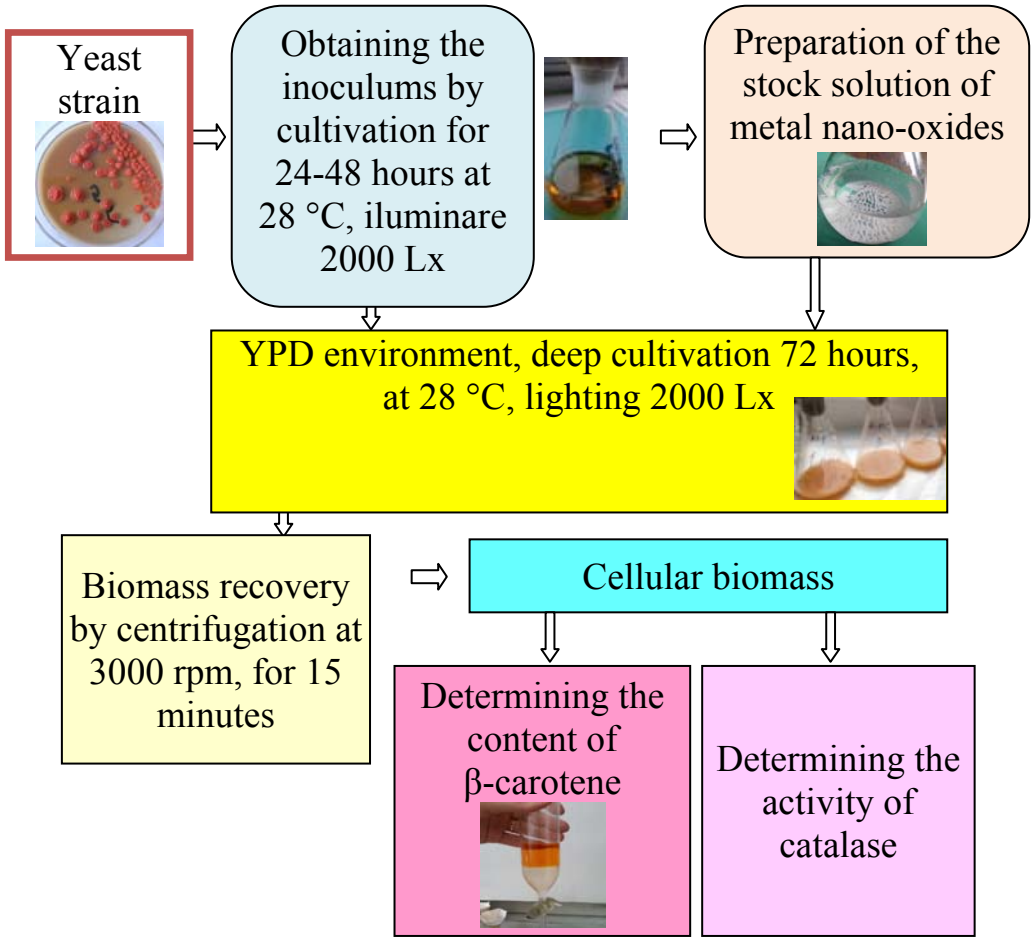
FIELD OF STUDY: Microbiology, Biotechnology, Bionanotechnology

AIM: Updating the regulatory package of security related data to metal oxide nanoparticles for applications in different areas.

ESSENCE: The invention relates to biochemistry, in particular to a method for assessing the toxicity of metal oxide nanparticles using yeasts. The method, according to the invention, provides sowing Rhodotorula gracilis CNMN-Y-30 yeast on a nutrient medium YPD, adding metal oxide nanoparticles at a concentration in the range of 0.5...15.0 mg/L, deep culturing for 72 hours, separating the biomass, determining in the biomass the catalase activity and β-carotene content, at the same time the toxicity level of metal oxide nanoparticles is established proceeding from concentrations that provoke a decrease in catalase activity or β-carotene content by 50 %.

ADVANTAGE: Nanoparticles toxicity level can be determined in 72 hours, the results being evaluated by determining the minimum inhibitory concentration (IC50 %) of catalase activity and β-caroten content.


Yeast strain
Obtaining the inoculums by cultivation for 24-48 hours at 28 °C, iluminare 2000 Lx
Preparation of the stock solution of metal nano-oxides
YPD environment, deep cultivation 72 hours, at 28 °C, lighting 2000 Lx
Biomass recovery by centrifugation at 3000 rpm, for 15 minutes
Cellular biomass
Determining the content of β-carotene
Determining the activity of catalase