The paper presents the assimilation by yeast strains of minerals like chromium or selenium with a high bioconversion rate as a way to produce microelements enriched yeast.

**MATERIALS AND METHODS**

**CULTURE MEDIA**
- glucose - yeast extract medium (GY) supplemented with mineral salts (NH₄, K, Mg²⁺, and Cr³⁺) gradually added (fermentation media for producing chromium yeast);
- molasses – yeast extract (MY) supplemented with mineral salts (K, Mg²⁺, Zn²⁺, Cu²⁺, Fe³⁺, and Se⁴⁺) gradually added (fermentation media for producing selenium yeast);
- sucrose – yeast extract (SY) supplemented with minerals salts (Mg²⁺, NH₄⁺, Zn²⁺, Cu²⁺, Mn²⁺, K, Fe³⁺, and Cr³⁺ and Se⁴⁺ gradually added) (fermentation media for producing chromium and selenium yeast).

**CULTIVATION CONDITIONS**

The submerged cultures (fermentation stage) were developed in 500 ml Erlenmeyer Flasks containing 100 ml GY, MY, SY media at 28 - 30°C for 16 - 18 h, on a reciprocal shaker (240 rpm). The inoculation ratio was 10%-15% (v/v).

**SCREENING METHOD**

- The selection of the most important yeast colonies in a medium enriched with chromium or selenium as CrCl₃ × 6H₂O or Na₂SeO₃.
- Elaboration of the screening by adaptability reduced the toxic impact of chromium or selenium against the yeast cells during the submerse fermentation.
- After the adaptation of yeasts strains to high concentrations of chromium or selenium, the process for obtaining the bioactive compounds was more efficient, as it could be observed an improved capacity to incorporate microelements into the yeast cells.
- The survived yeasts have been selected and isolated to form the static culture.
- Assimilation of chromium and selenium is influenced by the source of inoculum, inoculation ratio and parameters of cultivation and respectively by the different times of the addition of that during the fermentation.

**DETERMINATION OF TOTAL CHROMIUM AND SELENIUM CONCENTRATIONS**

**Instrumentation (Equipments)**
- A Perkin Elmer Elan DRC-e inductively coupled plasma mass spectrometer (ICP-MS) was used. The configuration was designed to measure trace elements in complex matrices.

**Sample preparation**
- 0.5 grams yeast powder were digested with 8 ml 65 % nitric acid, suprapur, according to an optimum program of des composition, in two steps. In order to simplify the mineralization process we have applied the digestion techniques using a microwave oven (Perkin Elmer).
- The total selenium and chromium concentrations were determination using ICP-MS technique.

**CONCLUSIONS**

- An automatic Linux based backup sistem was established in order to prevent data loss for critical analyses.
- The optimal parameters for obtaining chromium and selenium yeast were: 28°C, 240 rpm, rate of inoculation 15% and pH 5.0. It was obtained more than 11 g x kg⁻¹ dry yeast biomass enriched with chromium and selenium.
- For accumulation of a high content of the chromium and selenium it was selected the yeast strain which are adapted before to sodium selenite and after to chromium chloride in order to obtain a good selenium and chromium yeast producers.
- The test substance given to rats by mouth (oral) in a single 5000mg/kg-bw dose didn’t cause lethality in a 14 days observational period, so the LD50 value could not be obtained at the end of the experiment.
- We conclude that the test substance is “practically non-toxic”.

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