The invention refers to biotechnology, namely to a process for *Spirulina platensis* cyanobacterium biomass obtaining and may be used in the pharmaceutical industry, clinical and experimental medicine. The process, according to the invention, includes inoculation of the cyanobacterium in the quantity of 0,40...0,45 g/L into a nutritive medium containing, g/L: NaHCO<sub>3</sub> – 16,8, K<sub>2</sub>HPO<sub>4</sub> – 0,1, KNO<sub>3</sub> – 3,75, NaCl – 1,0, K<sub>2</sub>SO<sub>4</sub> – 3,75, CaCl<sub>2</sub>·6H<sub>2</sub>O – 0,04, MgSO<sub>4</sub>·7H<sub>2</sub>O – 0,7, H<sub>3</sub>BO<sub>3</sub> – 0,00286, MnCl<sub>2</sub>·4H<sub>2</sub>O – 0,00181, ZnSO<sub>4</sub>·7H<sub>2</sub>O – 0,00022, CuSO<sub>4</sub>·5H<sub>2</sub>O – 0,00008, MoO<sub>3</sub> – 0,000015, FeSO<sub>4</sub>·7H<sub>2</sub>O – 0,024, Fe-EDTA – 0,025, water – up to 1 L, to which on the first day of cultivation it is added the coordinative compound [Fe<sub>2</sub>MgO(C<sub>4</sub>H<sub>3</sub>OCOO)<sub>3</sub>(CH<sub>3</sub>COO)<sub>3</sub> (H<sub>2</sub>O)(C<sub>4</sub>H<sub>8</sub>O)] in the quantity of 0,005...0,025 g/L and cultivation thereof in the accumulation regime during 6 days under the light of 3400...4800 lx, at the temperature of 31...36°C and pH 9,5...10,0 The result consists in raising the activity of superoxidedismutase in the obtained biomass.

Claims: 1