

## USE OF THE EXTRACTS OF SPIRULINA BIOMASS CONTAINING PHYCOCYANIN

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In recent years, the attention of researchers is increasingly directed towards the exploration of natural antioxidants, including those obtained from cyanobacteria and microalgae. Some studies have shown that spirulina as dietary supplement and various extracts obtained from spirulina biomass can inhibit some forms of cancer in humans and animals [1], as well show antiviral, antibacterial and anti-inflammatory actions. A valuable component of the aqueous extracts obtained from spirulina are phycobiliproteins, especially phycocyanin. The antioxidant action of phycocyanin on hydroxyl and peroxy radicals is due to the presence of conjugated bonds in phycocyanobilin [2]. The contribution of some amino acid residues from the polypeptide chain to this process cannot be excluded [3]. The aim of this work was: obtaining phycocyanin preparations from spirulina biomass enriched with zinc and determining their antioxidant activity.

**Materials and methods.** In order to obtain the spirulina biomass used as a source of phycocyanin, the cyanobacterium *Spirulina platensis* CNM-CB 02 was cultivated on the modified Zarrouk medium for 10 days, respecting the optimal cultivation parameters. The spirulina biomass enriched with zinc, as well and phycocyanin was obtained by cultivating spirulina under the same conditions, but with the supplementation of zinc acetate (20mg/l) in the growing medium. The antioxidant activity of the extracts was determined by the ABTS+ cationic radical decolorization method [4].

To determine the extractant that ensures a higher yield and purity of phycocyanin in the extract, three variants of extracts were performed: aqueous extract, aqueous extract containing 1% CaCl<sub>2</sub> and 10% ethanol containing 1% CaCl<sub>2</sub>. The extractant that provided the highest yield and purity of phycocyanin was found to be the solution of 1% CaCl<sub>2</sub> in 10% ethanol. The comparative study of the antioxidant capacity of the researched phycocyanin extracts highlighted higher values of the degree of inhibition in the case of extracts obtained from zinc-enriched biomass that vary within the limits of -19.0-26.60%, compared to the values evaluated for the extracts with phycocyanin content extracted from biomass grown under standard conditions (13.60-18.53%).

Thus, all phycocyanin preparations obtained from spirulina biomass show significant antioxidant capacity when determined by the reaction with ABTS+, % inhibition prevailing in the phycocyanin samples obtained from zinc-enriched biomass compared to the preparations containing phycocyanin obtained from standard biomass.

**References:**

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