

**SYNTHESIS, STRUCTURE AND BIOLOGICAL ACTIVITY OF COPPER(II)  
COMPLEXES WITH 1,3-DIHYDROXY-2-METHYL-2-  
(SALICYLIDENEAMINO)PROPANE AND SOME OF ITS DERIVATIVES**

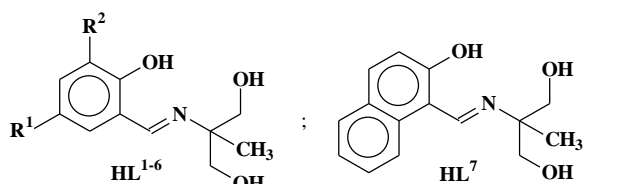
O. Olan<sup>1</sup>, V. Bulimaga<sup>2</sup>, V. Rudic<sup>1</sup>, K. Paholko<sup>2</sup>, V. Tsapkov<sup>2</sup>, A. Gulea<sup>2</sup>

<sup>1</sup>*Institute of Microbiology and Biotechnology, Academy of Sciences of Moldova,  
e-mail : olgaolan2008@gmail.com*

<sup>2</sup>*State University of Moldova, Chisinau, Moldova*

In the last decades much attention has been focused on the biological properties of polysaccharides and their chemical derivatives, especially sulfated polysaccharides. These polysaccharides have a broad range of important bioactivities comprising antioxidant, anticoagulant, antithrombotic, immuno-inflammatory and antiviral activities that might find relevance in nutraceutical/functional food, cosmetic and pharmaceutical applications.

The blue-green algae *Spirulina platensis* is important source of sulfated polysaccharides. Our previous researches demonstrated the ability of spirulina to stimulate the synthesis of endo- and exo-polysaccharides at its cultivation in the presence of CuSO<sub>4</sub>. Application of some coordination compounds of copper(II) as regulators of the synthesis of sulfated exopolysaccharides at *Spirulina platensis* cultivation can be an alternative way of sulfated polysaccharides production.



HL<sup>1</sup>: R<sup>1</sup>=R<sup>2</sup>=H; HL<sup>2</sup>: R<sup>1</sup>=Br, R<sup>2</sup>=H; HL<sup>3</sup>: R<sup>1</sup>=NO<sub>2</sub>, R<sup>2</sup>=H;  
HL<sup>4</sup>: R<sup>1</sup>=R<sup>2</sup>=Br; HL<sup>5</sup>: R<sup>1</sup>=H, R<sup>2</sup>=OH; HL<sup>6</sup>: R<sup>1</sup>=H, R<sup>2</sup>=OCH<sub>3</sub>

The aim of the present research was the determination of the effect that coordination compounds of copper(II) manifest on the exopolysaccharides accumulation by a blue-green algae *Spirulina platensis* CNM-CB-02. The object of the research was a blue-green algae

*Spirulina platensis* CNM-CB-02, stored in the National Collection of Nonpathogenic Microorganisms (Institute of Microbiology and Biotechnology of ASM). Some coordination compounds of copper(II) with condensation-products (HL<sup>1-7</sup>) of 2-amino-2-methyl-1,3-propanediol and substituted salicylaldehyde with composition Cu(L<sup>1-7</sup>)X (X=Cl, NO<sub>3</sub>) were used as stimulators of exopolysaccharides synthesis. The coordination compounds have been supplemented in three concentrations (0.005; 0.01 and 0.015 mmol/L) in the first day of cultivation. All tested compounds showed a slow inhibitory effect on productivity, being recorded the decreasing values with the increasing compounds concentration. The results of investigations of sulphated exopolysaccharides in liquid culture, at spirulina cultivation in the presence of coordination compounds of copper(II), showed an obvious influence on the process of their accumulation. A maximum content of sulfated exopolysaccharides is observed at spirulina cultivated in presence of the compound Cu(L<sup>6</sup>)Br (0,015 mmol/L) – 49,5 mg/L (2,6 times higher than the control value). A relatively high content of sulphated exopolysaccharides – 45,25; 42,12 and 44,06 mg/L, respectively, was determined for the compounds Cu(L<sup>1-2</sup>)Cl and Cu(L<sup>5</sup>)NO<sub>3</sub> also, at their maximum concentrations. The accumulation of sulphated exopolysaccharides in liquid culture at spirulina cultivation in the presence of coordination compounds of copper(II) with condensation-products of 2-amino-2-methyl-1,3-propanediol and substituted salicylaldehydes is increasing in the series (mg/L): Cu(L<sup>2</sup>)Cl (42,12) < Cu(L<sup>5</sup>)NO<sub>3</sub> (44,06) < Cu(L<sup>1</sup>)Cl (45,25) < Cu(L<sup>6</sup>)Br (49,5). The results of investigations demonstrate the possibility to apply these coordination compounds of copper(II) for stimulation of sulphated exopolysaccharides production by the spirulina.