

ANTIMICROBIAL ACTIVITY OF DIFFERENT SPIRULINA PLATENSIS FRACTIONS AGAINST METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS

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ABSTRACT

Background: Infections caused by bacteria lead to high rate mortality within people, due to high antimicrobial resistance and the inability to cure such infections. The *Spirulina platensis* as a whole has been known for its nutritional proprieties and biological functions such as antiviral, antibacterial, antifungal and antiparasitic proprieties but the antimicrobial activity of different fractions haven't been yet studied in detail. In this present study, the cyanobacterial fractions: proteoglycans, phospholipids, chlorophyll + carotenoids, phycocyanin were tested on 89 Methicilin-resistant *Staphylococcus aureus* (MRSA) strains isolated from different patients specimens and on reference strains *Staphylococcus aureus* ATCC 29213 and *Staphylococcus aureus* ATCC 25923.

Materials/methods: Reference strains *Staphylococcus aureus* ATCC 29213, *Staphylococcus aureus* ATCC 25923 and eighty-nine clinical strains of Methicilin-resistant *Staphylococcus aureus* have been used. Microdilution assay was performed according to EUCAST guidelines to determine the antimicrobial activity of *Spirulina platensis* CNM-CB-02 extracts. In was evaluated the inhibitory and bactericidal activity of *Spirulina platensis* extracts.

Results: The chlorophyll + carotenoids combined extract showed the highest mean of minimum inhibitory concentration (0.62/0.77 mg/ml) and at this value the extract exercised bactericidal activity, too. The MIC value of proteoglycans was 2.5 mg/ml; of phospholipids – 5 mg/ml; of phycocyanin – 4 mg/ml. The value of MBC for proteoglycans was 5 mg/ml; of phospholipids – 5 mg/ml; and phycocyanin exhibited no bactericidal activity.

Conclusions: This study confirmed the inhibitory and bactericidal activity of the *Spirulina platensis* fractions against MRSA. Further studies are required to confirm the biological activity of *Spirulina platensis* fractions on a larger variety of microorganisms.

