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Advancement of Green Process Through Microwave-Assisted Extraction of Bioactive Metabolites from *Arthrospira Platensis* and Bioactivity Evaluation

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Abstract:

Bioactivity and functional properties of cyanobacterial extract mostly depends on process of extraction, temperature and solvent used (polar or non-polar). To evaluate these parameters a design of experiment (DOE; using a 2^k design) was performed with *Arthrospira platensis.* Extraction process was optimized through microwave-assisted extraction considering solvent ratio, temperature and time of extraction with tolar (PS) and non-polar (NPS). Maximum extract yield obtained was 4.32 ± 0.25% and 5.26 ± 0.11% (w/w) respectively for PS and NPS. Maximum content of bioactive metabolites in PS extracts were thiamine (846.57 ± 14.12µg/g), riboflavin (101.09 ± 1.63µg/g), C-phycocyanin (2.28 ± 0.10µg/g) and A-phycocyanin (4.11 ± 0.03µg/g), while for NPS extracts were α-tocopherol (37.86±0.78µg/g), β-carotene (123.64±1.45µg/g) and 19.44±0.21mg/g of fatty acids. *A. platensis* PS extracts showed high antimicrobial activity and PS extracts had antioxidant activity of 0.79 ± 0.12 µmolTE/g for FRAP assay, while for NPS extracts 1.03±0.08µmol α-TE/g for FRAP assay.