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**PHYTOCHEMICAL AND ANTIOXIDANT COMPOSITION OF CRUDE WATER EXTRACTS
OF CHLORELLA VULGARIS AND ITS GROWTH-ENHANCING PROPERTIES
ON SACCHAROMYCES CEREVISIAE CULTURED IN AN ETHANOLIC CONDITION**

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Abstract. This study was conducted to effectively extract and characterize bioactive compounds found in *Chlorella vulgaris* and further test for their beneficial growth properties on *Saccharomyces cerevisiae* cultured in an ethanolic condition. Bioactive compounds in *Chlorella vulgaris* were extracted using ultrasound and water as solvents. The extracts were analyzed for total phenol and total flavonoid as part of their phytochemical composition and their DPPH radical activity and Hydrogen peroxide scavenging activity as part of their antioxidant properties and protective potential of *Saccharomyces cerevisiae* in an ethanolic culture. The results showed that extracts of *Chlorella vulgaris* are rich in phenols and flavonoids with an increase in concentration of *Chlorella vulgaris* extracts leading to an increase in the phytochemical composition of up to 47.67 GAE mg/L for total phenols and 218.67 QE mg/L total flavonoids. The antioxidant composition showed high DPPH activity (70.12 %) and H₂O₂ scavenging activity (4.97%). After 23 days of culture, treatment with *Chlorella vulgaris* extracts enabled the yeast cells to maintain a high viability with the 2% samples having the highest viability of 95.75%, followed by 4% and 0.1% at 94.04 and 89.15% respectively with 1% having the least viability of 74. Hence, ultrasound extraction with water as a solvent produced a lot of beneficial secondary metabolites from *Chlorella vulgaris*. The addition of *Chlorella vulgaris* extract increased the viability and cell number of *Saccharomyces cerevisiae* after 27 days, thereby protecting the yeast cells from the toxic effects of ethanol.

Table 1: Physicochemical properties of chlorella beers

Samples	Total phenol Content (mg GAE/L)	Total Flavonoid content (mg QE/L)
CWE1	4,60±0,06 ^c	30,81±17,85 ^c
CWE2	11,66±0,74 ^b	272,10±27,95 ^b
CWE3	47,67±1,05 ^a	218,67±17,51 ^a

References

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