Nutritional and functional evaluation of *Euglena gracilis*, *Porphyridium purpureum* and *Arthrospira platensis* for feed application

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Protein-energy malnutrition has prompted scientific research to study new protein sources for the feed sector that can guarantee a high nutritional profile and environmental protection. *Euglena gracilis* (EG), *Porphyridium purpureum* (PP) and *Arthrospira platensis* (AP) are microalgae of great interest in feed industry due to wide range of potential applications. The nutritional aspect of EG, PP and AP are well-defined literature but their functional aspects require further investigation. This study aims to evaluate the total phenolic content (TPC) by Folin-Ciocalteu and antioxidant activity (AA) by ABTS and FRAP methods of AG, PP and AP, following chemical extraction (H_2O:EtOH, 50:50). Results showed that EG exhibited a significantly ($p<0.05$) higher TPC (988.23±24.40mg Tannic Acid Equivalent (TAE)/100g) than AP (730.12±104.12mg TAE/100g) and PP (352.5±63.74mg TAE/100g). Same trend was also confirmed for ABTS (3664.08±301.73mg Trolox Equivalent (TE)/100g; 2358.29±183.8mg TE/100g; 1318.79±127.99mg TE/100g, for EG, AP and PP, respectively). FRAP was higher for both AP (58.10±5.32mg $FeSO_4$) and EG (49.24±1.35mg $FeSO_4$) than PP (33.06±4.60mg $FeSO_4$). Results showed that EG has a higher AA than AP and PP but further investigations on other functional profiles, specifically after *in vitro* digestion are necessary to determine the optimal microalgae species for application in feed sector.

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