BROMATOLOGICAL PROFILE AND CHARACTERIZATION OF THE MICROBIAL COMMUNITY OF A PURPLE NON-SULFUR BACTERIAL BIOMASS

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RESUMO

The use of purple non-sulfur bacteria (PNSB) to produce biomass from wastewater has being highlighted due to its potential to mitigate environmental contamination and promote ecosystem health. The PNSB, such as *Rhodopseudomonas palustris*, also plays a fundamental role as sustainable source of nutrients to animal feed, contributing to its health. Animal health relies on assessing the bromatological profile of ingredients for accurate nutritional composition, crucial for formulating balanced diets and also understanding the bacterial community within these ingredients, ensuring optimal growth and well-being. Thus, the aim of this study was to access the bromatological profile and to characterization the microbial community of *R. palustris* bacterial biomass. The biomass was grown in a fishery slaughterhouse effluent (6 bioreactors filled with pasteurized effluent, incubated with 1% v/v inoculum, 32±2°C, 1500±500lx, 7 days) and recovered as a biomass (decantation + lyophilization). The product (lyophilized biomass) was used to determine data of protein, moisture, dry matter, ash and ether extract (duplicate), crude fiber and gross energy (triplicate) following AOAC and INCT-CA protocols. The microbiome composition was determined (triplicate) through metagenomic analysis of region V3V4 from 16SrRNA gene (Illumina). Results revealed a protein content of 68.14%±0.51, dry matter 93.22%±1.41 and the low percentage of ash 3.52%±0.41. The biomass achieved 7.42%±0.76 of crude fiber. Analysis of the lipid content revealed a concentration of 8.38%±0.28 and crude energy 4594.67 kcal/kg. These results evidencing a sustainable source of protein for animal feeding. At metagenomic analysis, a total of 56 bacterial Genre were detected, with *Rhodopseudomonas* (54%), *Clostridium* (10.6%), *Enterobacter* (9.8%), *Azospira* (4.4%), and *Acinetobacter* (4.1%) being the most prevalent. These results corroborate the relative abundance profile at Phylum and Family level of operational taxonomic units from bacterial biomass, with the predominance of Proteobacteria and Xanthobacteraceae, respectively. This study indicates that the produced biomass is rich in protein, nutrients and energy, and do not present microorganisms considered risky for animal feeding, fostering its applicability as a holistic approach to sustainability and health. Funding source: Biodiversa/Fapeam(01.02.016301.03247/2021-54), Universal/CNPq (Processo nº422010/2021-9).

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