

TITLE: USE OF SPENT COFFEE GROUNDS AS ALTERNATIVE MEDIA FOR GROWTH AND PRODUCTION OF ANTIMICROBIAL COMPOUNDS BY *Enterococcus faecium* 135

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ABSTRACT:

Coffee is one of the most consumed beverages worldwide, the consumption and production increase each year, as well they residues, the spent coffee grounds (SCG) is one of the principal residues, and they are known for being sources of cellulose, hemicellulose, and proteins, presenting potential to be used as alternative carbon sources. The study evaluated the capability of SCG to be used as alternative media to growth of *Enterococcus faecium* 135 and its ability to produce antimicrobial compounds. SCG was pre-treated with 100 mg H₂SO₄/g, 45 min, autoclaved at 140 °C, then a post-hydrolysate was performed with 4% (w/v) of H₂SO₄, by autoclaving at 121 °C for 60 min., after the pH was adjusted to 2.47 with NaOH. The phenolic compounds of the hydrolysate were reduced using a C-18 silica column, then it's pH was adjusted to 6 with NaOH, and sterile filtered in a 0,22µm cup. The alternative medium was made using the same amount of salts and protein sources presented in MRS commercial media, using the SCG detoxified hydrolysate as carbon source. The *E. faecium* was pre-inoculate in MRS (Difco, USA) for 18 hours, the cells were washed with saline solution, and resuspended in SCG alternative media, *E. faecium* cultives were carried at 35 °C, 100 rpm in an orbital shaker for 24 hours. After this period, it was evaluated the viability (CFU/mL), production of lactic acid and activity against *Listeria monocytogenes*. After the pre-treatment it was possible to recover 43.15 g/L of total sugars of SCG. The viability increased 2 log CFU/mL after 24 hours and had an activity against *L. monocytogenes* of 584 AU/mL, and a production of 8.26 g/L of acid lactic. Concluding, SCG showed as a good alternative carbon source, positively influencing in the growth, production of acid lactic and antimicrobial compounds.

Keywords: Spent coffee grounds, hydrolyses, alternative media, antimicrobial compounds

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