

TITLE: ANTIMICROBIAL ACTIVITIES *IN VITRO* OF PASSION FRUIT AND APPLE FLOUR EXTRACT

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ABSTRACT

Ingredients with natural antimicrobial factors contributes to food safety and to shelf life. Fruit waste consist of peels, seeds and pulp, rich in vitamins, minerals, fiber and phytochemicals with different biological activities such as antioxidant, antimicrobial and anti-inflammatory. This work aimed to compare antimicrobial activity of flour obtained from waste of passion fruit (*Passiflora edulis*) (flour Passion) and apple (*Malus domestica*) gala type (flour Apple) against pathogens that cause food-borne illness, in order to suggest its use as natural preservative for dry food. Antimicrobial activity of extracts was evaluated against *Citrobacter freundii* ATCC 8090 (Gram negative) and *Staphylococcus aureus* ATCC 29212 (Gram positive). These bacteria were previously cultivated in BHI broth, at 37° C, by 24 h. The assay was performed in 96-well plate by serial dilution of extracts (250-1.95 µg/mL) and adding a standardized inoculum (0.5 McFarland range, i.e. 10⁸ cells/mL) of bacteria cultivated in BHI broth. Then, plates were incubated at 37° C. After 24 h, a reading was made at 490 nm to verify percentage of growth inhibition. From the results it was possible to infer that the waste from two fruits were able to inhibit the growth of both microorganisms tested, however, flour Passion was 2.06 times more efficient in *C. freundii* (86.7% ± 2.0) inhibition and 2.44 times more efficient in *S. aureus* (97.1% ± 1.2) inhibition, than flour Apple (41.95% ± 1.1; 39.84% ± 2.5, respectively), with extracts at 250 µg/mL. These results indicate the potential use of passion fruit residue flour as natural preservative for dry foods. Although this residue has inhibited the growth of both Gram positive and negative microorganisms, new studies of antimicrobial activity are needed to evaluate it spectrum as food preservative.

Keywords: Natural preservative, *Passiflora edulis*, *Malus domestica*, reuse of fruits.

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