Selection of potential starter microbial strains from Coffea arabica for controlled fermentation in coffee fruit

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INTRODUCTION: Coffee is one of the most consumed beverages throughout the world. Coffee fruit fermentation elicits in the presence of different microorganisms that pertain to bacteria, fungi and yeast categories. For a long time, the avoidance of fermentation processes in coffee fruit were the norm after harvesting, since coffee growers had no control of this process and the production of undesirable flavors could take place. However, the fermentation of sugars – mainly complex sugars, as pectins and poly-galacturans – by microorganisms present in fruit pulp and fruit peel may also produce substances that contribute to desirable flavors, which directly or indirectly can enhance a better taste in the coffee beverage. **OBJECTIVE**: Evaluation of pectinolytic activity in microorganisms isolated from coffee fruit and the measurement of enzyme activity in different media cultures as well as the determination of chemical volatiles produced in the fermentation process. **MATERIALS AND METHODS**: A pectin-lyase plate test will select 15 to 20 potential pectinolytic strains among 450 original strains. The selected strains will grow in synthetic pectin media and coffee peel/pulp media. Spectrophotometric and titrimetric methods will help measure their activities of pectin lyase, polygalacturonase and pectin methyl-esterase. Organic acids and volatile compounds will be analyzed by HPLC and SPME/GC-MS, respectively. **DISCUSSION AND RESULTS:** Data statistical analysis will help select a pool of potential microorganisms that may be used as starter cultures in coffee fermentation. **CONCLUSION:** The difference in strain composition for different coffee growers and the related distinction in coffee sensorial evaluation after coffee fermentation indicate that fermentation not only enhances coffee flavor but is also dependent on what kind of microbiota is present. However, since there is no conclusive data obtained so far due to the complexity of this process, this project has the support of coffee growers.

Keywords: coffee, fermentation, chemical analysis

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