

## Screening of antioxidant activity of fermented papaya

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**Background:** Papaya is the fruit of *Carica papaya* L., consumed for its beneficial properties, directly or as a fermented fruit supplement [1]. **Objective:** Compare the total phenolic content (TPC) and the antioxidant activity (Ferric Reducing Antioxidant Power, FRAP) evolution in a variety of papaya fermentation experiments using fruit natural microorganisms (spontaneous fermentation) versus fermentation with *Gluconobacter oxydans* bioinoculation. **Methods:** Different papaya fermentations were performed: spontaneous (P1 and P2, during 7 days; P3, P4 and P5, during 9 days) and with bioinoculation (P6 and P7, during 9 days). Then, TPC was determined according to the Folin-Ciocalteu (FC) procedure [2], mixing 250  $\mu\text{L}$  of sample with 2.5 mL of FC reagent, followed by an addition of 2 mL of sodium carbonate solution (7.5 % w/v). This mixture was incubated at 45 °C for 15 minutes, and then kept in the dark at room temperature for 30 minutes. Absorbance was measured at 765 nm. The FRAP method [3] was performed mixing 1.2  $\mu\text{L}$  of freshly FRAP reagent with 40  $\mu\text{L}$  of sample, and then incubating for 15 minutes at 37 °C. Absorbance was read at 593 nm. **Results:** The lowest TPC was observed on day 7 of P4 ( $121.20 \pm 0.12 \mu\text{g GAE}\cdot\text{mL}^{-1}$ ), and the highest content was observed on day 8 of P7 ( $260.18 \pm 0.02 \mu\text{g GAE}\cdot\text{mL}^{-1}$ ). TPC decreased from the first to the last day of fermentation in all tests, except for the tests where bioinoculation strategy was used. Those tests also showed a higher FRAP content, although from day 1 to day 7, FRAP also slightly increased in P1, P2, and P3 (spontaneous fermentations). **Conclusions:** Antioxidant capacity increased as a result of fermentation with *G. oxydans*, probably due to the increased amount of phenolic compounds observed. The final product may be used as a functional food or cosmetic applications.

**Keywords:** Acetic acid bacteria; antioxidant activity; fermented papaya; papaya; phenolic compounds;

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