INCREASING BIOACTIVITY POTENTIAL OF ORANGE JUICE POLYPHENOLS BY BIOTRANSFORMATION WITH TANNASE FROM *Paecilomyces variotti*

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Polyphenols are considered the most common antioxidants in our diet, however, the chemical structure of these compounds may affects their bioavailability and bioactivity. In order to increase the functional activity of such compounds, crude extract of tannase obtained from *Paecilomyces variotti* was evaluated for its ability to biotransform orange juice polyphenols and the commercial standard hesperidin, the main flavanone in orange juice. Both treated and untreated juices were subject to analysis of titratable acidity, pH, vitamin C and total phenolics contents. In addition, the orange juice and hesperidin pattern were evaluated before and after biotransformation by HPLC-DAD and changes in antioxidant capacity of the samples were tested by *in vitro* DPPH and ORAC assays. Results showed that titratable acidity, pH and ascorbic acid content did not present significant variation after orange juice enzymatic treatment. However, there was an increase in total phenolics content of 16.8% on treated juice. Furthermore, by changes in chromatographic polyphenolic profile of the treated samples, the crude extract of tannase was able to biotransform orange juice and to convert hesperidin into the aglycone hesperitin. The antioxidant activity of biotransformed orange juice increased about 55% by the ORAC method and 70% by DPPH method, while for biotransformed hesperidin, the increase was nearly 180% by the ORAC method and 1480% by DPPH method. These results provide new substrates for hydrolysis with tannase from *Paecilomyces variotti* and confirm that biotransformation is a good strategy to improve bioavailability and *in vitro* antioxidant activity of orange juice.