



IMPACT OF DIFFERENT TYPES OF PECTINASE ENZYMES ON THE NUTRACEUTICAL QUALITY AND SHELF LIFE OF THE GRAPE JUICE

Maria da Conceição Prudêncio Dutra (Maria da Conceição Prudêncio Dutra) (</icbc/icbc-2022/authors/maria-da-conceicao-prudencio-dutra?lang=en>)¹

Marcos Lima (Marcos Lima) (</icbc/icbc-2022/authors/marcos-lima?lang=en>)²

Ana Júlia de Brito Araújo (Ana Júlia de Brito Araújo) (</icbc/icbc-2022/authors/ana-julia-de-brito-araujo?lang=en>)²

Aline Telles Biasoto Marques (Aline Telles Biasoto Marques) (</icbc/icbc-2022/authors/aline-telles-biasoto-marques?lang=en>)³

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HOW TO CITE THIS PAPER?

Abstract

Grape juice is one of the most consumed juices, due to its pleasant sensory acceptance related to foxy aroma and flavor, natural sweetness, attractive color and freshness. In addition, the product is source of bioactive compounds, with functional benefit properties to the health, according to studied developed in vitro and in vivo. During the grape juice processing, is known that the addition of commercial enzymatic preparations based on pectinases, when used during the grapes maceration step, can improved process yield and color intensity, decreased the viscosity of the beverage, and increase the bioactive compounds content and antioxidant activity. There are several commercial enzymatic formulations available for application in the market, consisting mainly of pectinases, cellulases and galactosidases. Given this, the goal of this studied was evaluate the influence of different types of commercial enzyme preparations based on pectinases (CEPP) on the physicochemical characteristics (pH, soluble solids and total acidity), color intensity (CI) and tonality, total phenolic compounds (TPC) and antioxidant activity (AOX) of the grape juice during twelve months of shelf life. Juice analysis were performed at two months of intervals, in the times of 0 days, 60 days, 120 days, 180 days, 240 days, 300 days and 360 days of storage at room temperature of the bottles. Grape juices were produced following the formulation adopted by industries of the Northeast region of Brazil, and a mixture of Isabel Precoce 80% and BRS Cora 20% cultivars was made by mixing the grapes at weighing. All juice samples were obtained by hot extraction process, with maceration time of 60 min(60°C) and pasteurization at 86°C for 3min, without bagasse pressing. Five CEPPs with distinct composition were tested in triplicate using the intermediate dosage recommend by the manufacturer: Endozym Pectofruit PR, Everzyn Thermo, Endozym Rouge, Pectinex Ultra Color and Pectinex Ultra Pulp. Additionally, a control treatment was elaborated without the addition of CEPP during the grapes mecaration. The juice elaborated with Endozym Pectofruit PR CEPP (Pectinliase, polygalacturonase, pectinmethylesterase and cellulose) promoted higher yield to the process (67%) and increased 15% of the grape in juice yield in comparison to the control. While the juice with Everzyn Thermo CEPP, which the main activity is in function of the hemicelluloses, raised the content of soluble solids (21.4°Brix), CI (29.1), TPC (1920.8 mg L-1) and AOX (7.43 mmolTrolox L-1, 14.73 mmolTrolox L-1 and 26.83 mmol Fe2+ L-1, respectively by the DPPH, ABTS and FRAP assays). After twelve months of storage, all the samples lost acidity and color, while the pH and tonality values increased. Highlighting, the juice with Everzyn Thermo CEPP as the sample that presented more accelerated loss of total acidity (0.83 to 0.71%) and CI (29.1 to 10.1). On the other hand, AOX and TPC remained stables over the twelve months of evaluation of the juice of this treatment. The results obtained demonstrated that the choice of the pectinase enzyme could be decisive for the nutraceutical quality and shelf life of the grape juice, besides the influence in the yield.



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Institutions

¹ Universidade Federal da Bahia

² Instituto Federal de Educação, Ciência e Tecnologia do Sertão Pernambucano

³ Empresa Brasileira de Pesquisa Agropecuária

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