Development of Functional Beverage from Wheat Grass Juice

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Abstract. The juice from wheat grass is called “green blood” and is an excellent detoxifying, facilitating the elimination of toxins and fats from body. In the form of fresh juice, it has high concentrations of chlorophyll, active enzymes, vitamins and other nutrients. The aim of this work was the development and characterization of a functional beverage from green wheat juice by adding apple and limes. The antioxidant capacity, vitamin C, polyphenols and flavonoids content were quantified by using spectrophotometry. The final product was pasteurized and evaluated by the content of bioactive compounds during storage at intervals of 7 and 14 days. During storage there were found slight decreases of the contents of bioactive compounds. The juice obtained has a sweet-sour taste, a unique flavor and a very pleasant smell. This product targets all categories of consumers and represents an ideal morning snack for those who are concerned about a healthy lifestyle.

Keywords: antioxidant capacity, beverage, wheat grass, polyphenol, Triticum aestivum

Introduction. Recently, the focus of scientific investigations has moved from the primary role of food as the source of energy and body-forming substances to the more subtle action of biologically active food components on human health. There has been an explosion of consumer interest in the active role of food in the well-being and life prolongation, as well as in the prevention of initiation, promotion, and development of nontransmissible chronic diseases (Granato et al., 2010). Wheat grass is the young grass of the common wheat plant Triticum aestivum Linn., family Poaceae (Graminae). It is commonly known as the “green blood” due to its high chlorophyll content which accounts for 70% of its chemical constituents (Chauhan, 2014). Wheat grass can be freshly juiced or dried into powder and used for animal and human consumption, containing important nutrients and vitamins. In the form of fresh juice, it has high concentrations of chlorophyll, active enzymes, vitamins and other nutrients (Mujoriya and Bodla, 2011).

Aims and objectives. Wheat grass helps blood flow, digestion, and general detoxification of the body due to the presence of biologically active compounds and minerals and due to its antioxidant potential. The aim of this work was the development and characterization of a functional beverage from green wheat juice by adding apple and limes.

Materials and Methods. Wheat grass was grown in the laboratory and the other ingredients (apples, limes, cinnamon and honey) necessary for obtaining the beverage were purchased from local supermarkets. The fresh beverage samples were compared with the pasteurized beverage (72°C-12”), during a 14-day period; the samples were analyzed at an interval of 7 days. The determination of ascorbic acid was made by titration with a solution of potassium iodate (KIO₃). Overall antioxidant activity was evaluated by indirect spectrophotometric method, which utilized 2,2-diphenyl-1-picrylhydrazyl (DPPH) as generat-
ed system for free radical. Total flavonoid content and total polyphenol content were determined using the aluminum chloride spectrophotometric method and Folin Ciocalteu method, respectively. The functional beverage was organoleptically evaluated for sensory parameters such as colour, taste, flavour and overall acceptability. The nine point hedonic scale was employed for the evaluation of sample.

Results and Discussion. The content in total phenols, flavonoids, vitamin C and overall antioxidant capacity of the analysed samples is presented in table 1. Vitamin C ranged between 4.47 mg/100 g and 6.4 mg/100g, the highest concentration being found in fresh beverage. The values for the phenolic contents ranged between 71.11 and 91.74 mg GAE/100g. The total flavonoid contents ranged from 15.20 to 28.54 mg QE/100 g. The maximum amount was always found in the fresh juice. The results for the antioxidant activity that were expressed as percentage of decrease in the absorbance value of each sample compared with the absorbance of DPPH reference solution, ranged between 13.27 and 13.98 %. According to the sensory analysis results, were appreciated the taste and flavour by the tasters (Fig. 1).

Conclusion. The beverage has a high content of bioactive compounds and after pasteurization and storage (14 days) the loss in the monitored bioactive compounds was not significant. The obtained results confirmed that wheat grass can serve as a good source of bioactive compounds in human diet or as functional ingredients in different foods.

REFERENCES