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Studies about fermented fruit juice

Consequently, the need for probiotic food and pharmaceutical products is growing day by day (Homayouni Rad et al. There was a linear gradient applied as follows; 95% solvent A and 5% solvent B at 0 min; 65% solvent A and 35% solvent B at 45 min; 25% solvent A and 75% solvent B at 47 min and at 50 min returning to initial conditions. According to the finding, dragon, apple, orange and kiwifruit juices can be fermented with water kefir grains to produce non-dairy, functional, and probiotic beverages.Graphical Abstract Article 29 September 2024 Use our pre-submission checklist Avoid common mistakes on your manuscript. According to the codex, non alcoholic beverages are characterized as beverages with ethanol content below 0.3% by volume in Non-alcoholic Beverages Notification of Turkish Food Codex (2007/26). 2021).The industry collaborates with researchers to create innovative technologies and food products that cater to specific requirements and offer advantages, such as functional meals and nutraceuticals. The microbial growth rates of Lactobacillus spp., Lactococcus spp. ♦ CAS PubMed Google Scholar Valero-Cases E, Nuncio-Jáuregui N, Frutos MJ (2017) Influence of fermentation with different lactic acid Bacteria and in Vitro digestion on the Biotransformation of Phenolic compounds in Fermented Pomegranate juices. After 30 min at room temperature, the absorbance of the samples was measured at 450 nm using a UV-vis spectrophotometer (BioTek Instruments, Winooski, Vermont, USA).Determination of phenolic profiles by HPLCA HPLC system was used to evaluate the profiles of phenolic compounds derived from fermented fruit juice samples (Capanoglu et al. In terms of physicochemical properties, fermentation while pH was decreased, TTA was increased in all fruit juices. From this point of view, limited research has examined the characterization of different types of water kefir fermented fruit juices from several points of view, such as phenolic content, probiotic viability, organic acid, and alcohol content. 18.0, USA). Journal of Applied Microbiology, 132(6):4349–4358. Front Cell Infect Microbiol 13:1120995Article PubMed PubMed Central Google Scholar Lan T, Lv X, Zhao Q, Lei Y, Gao C, Yuan Q, Sun X, Liu X, Ma T (2023) Optimization of strains for fermentation of kiwifruit juice and effects of mono- and mixed culture fermentation on its sensory and aroma profiles. 2021), which is important for allergic people or vegan consumers.Although the content may differ according to the substrate; sugars, organic acids, alcohols, and esters are frequently present in fermented foods and beverages. In order to obtain the necessary functionality from the intrinsic microbiota, the product must exhibit minimal cell viability, which, according to the Food and Agriculture Organization of the United Nations/World Health Organization (FAO/WHO, 2002) recommendations, is a minimum of 4 and 7 log CFU/g for yeast and bacteria, respectively (Vimercati et al. The biochemical composition and physicochemical properties of these probiotic fruit beverages are well understood; however, the survival of lactic acid bacteria (LAB) and yeast in a simulated gastrointestinal tract, as well as sensory evaluation, require extensive investigation to achieve successful commercialization of novel fruit juice-based probiotic beverages. The results were presented as mg gallic acid equivalent/100 mg sample.Determination of total antioxidant capacityThe total antioxidant capacity of the samples was evaluated using two different methods: the 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay and the cupric ion-reducing antioxidant capacity (CUPRAC) assay. It has been reported that the 3-year dollar growth of plant-based foods will be 44% in 2022 (Good Food Institute, 2022).To replace or reduce the consumption of animal-based foods and ingredients from the diet, fruits and vegetables, cereals, nuts, and seeds have become the most commonly used commodities (Alves et al. Randazzo et al. ♦ CAS PubMed Google Scholar Escudero-López B, Cerrillo I, Herrero-Martin G, Hornero-Méndez D, Gil-Izquierdo A, Medina S, Ferreres F, Berná G, Martín F, Fernández-Pachón M-S (2013) Fermented Orange juice: source of higher carotenoid and Flavanone Contents, J Agric Food Res 14:100688 Google Scholar Meenu M, Kaur S, Kaur M, Mradula M, Khandare K, Xu B, Pati PK (2024) The golden era of fruit juices-based probiotic beverages: Recent advancements and future possibilities. 3Changes in total phenolic content (a:TPC) and total antioxidant capacity (b: DPPH and c: CUPRAC) of the control and kefir-like juices. Applied Food Research:100330Marius FKE, Marie KP, Blandine M, Laverdure TP, Daquain FTU, François ZN (2023) Development of a non-dairy probiotic beverage based on sorrel and pineapple juices using lactocaseibacillus paracasei 62L. In the results of the DPPH assay, the change in antioxidant activity of dragon juice was not statistically significant (p > 0.05). TPC in fruits and vegetables are essential characteristics because of their good impact on several physiological processes connected to human health, such as cancer risk reduction, anti-inflammatory activities, and carcinogenesis inhibition (Wu et al. The most noticeable changes were observed in apple and kiwi fruit juices. Water kefir has antimicrobial, antioxidant, anti-inflammatory, immunomodulant, antihypertensive, anti-toxic, anti-ulcerogenic, hypocholesterolemic, hyperglycemic, anti-hyperlipidic, healing, bioactive properties, and probiotic activities (Bueno et al. A set of external standards was used for the quantification.Statistical analysesStatistical analyzes were performed using Minitab (Ver. Bueno et al. 2013). While fermentation preserves nutritional properties and provides health benefits because it does not require heat (Araújo et al. The measurement of organic acids results in the construction of calibration curves for each constituent using pure standards at various concentrations. Appl Microbiol Biotechnol 102(2):921–932. (2016), and Akarca and Baykal (2023) also reported that redness (b*) values significantly increased with fermentation, similar to our results. (2004) and Randazzo et al. Probiotics are defined as “live microorganisms which, when administered in adequate amounts, confer a health benefit on the host” by the Food and Agriculture Organization/World Health Organization (FAO/WHO). Nutrients 14(18):3873Article CAS PubMed PubMed Central Google Scholar Ozcelik F, Akan E, Kinik O (2021) Use of Cornelian cherry, hawthorn, red plum, rosehip and pomegranate juices in the production of water kefir beverages. After 48 h of fermentation, the measured pH values of apple, dragon, kiwi, and orange juices were 3.83, 5.06, 3.21, and 3.51, respectively. 2023), using fruits to make fermented beverages is one of the strategies to minimize losses and serve new products to consumers (Bueno et al. Fruit juices (FJ) were pasteurized for 5 min at 75° C, then cooled to room temperature (Randazzo et al. When 48 h amounts were compared, it was observed that fermented juices obtained from fruits, except orange, contained higher amounts of phenolic substances than unfermented fruit juices. In this scope, a healthy alternative will be produced for consumers who do not prefer to use animal-based beverages or who are allergic or lactose intolerant to dairy products, and it will contribute to sustainability and reduce carbon emissions by providing a novel plant-based beverage. Analyses were conducted with three replicates.Determination of the physicochemical propertiesThe pH of the samples was determined using a digital pH meter (Hanna, HI 9321). In a study, fermentation of pomegranate juice with Lactobacillus strains resulted in the identification of new phenolic derivatives such as punicalagin and catechin which indicates the biotransformation of phenolics during fermentation (Valero-Cases et al. ♦ CAS Google Scholar Puerari C, Magalhaes-Guedes KT, Schwan RF (2015) Physicochemical and microbiological characterization of chicha, a rice-based fermented beverage produced by Umutina Brazilian Amerindians. ♦ CAS PubMed Google Scholar Rad AH, Akbarzadeh F, Mehrabany EV (2012) Which are more important: prebiotics or probiotics? 2022; Wu et al. With longer fermentation times, fermentable sugars are metabolized more quickly, which reduces the amount of soluble solids ("Brix) present (Paredes et al. 2Changes in pH and TTA values of fruit juices during fermentation with water kefirTable 1 Changes in the color parameters and TSS content of juices during fermentation with water kefirAt time 0, the pH of different fruit juices varied between 3.38 and 3.84, while dragon juice was 5.41. Fermentation was observed with pH control, and subsequent to the incubation period, the physicochemical characteristics and microbiological analyses of the samples were performed. It is also important to note that different types of phenolic compounds are affected differently by fermentation. Furthermore, the ethyl alcohol concentration in beverages is within the regulatory limitations for non-alcoholic beverages. Coccus LAB on M17 agar and rod LAB on Man-Rogosa-Sharpe (MRS) agar were counted using the pour plate method after anaerobic incubation at 37 °C for 48 h. Fermentation did not affect hesperidin content. Before inoculating water kefir grains, in pasteurized fruit juices, the count of Lactobacillus spp., mesophilic lactic cocci, and yeast were below the detection limit (

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