

Title Production and prebiotic activity of white dragon fruit powder (*Hylocereus undatus*)
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Abstract

Prebiotics which have been found effective in gastrointestinal normal flora proliferation and pathogen suppression occur naturally in fruits and vegetables including white dragon fruit (*Hylocereus undatus*). A study was, therefore, conducted to produce white dragon fruit (WDF) powder by optimizing the spray drying conditions using maltodextrin DE 10 (MD) as a carrier. The process was performed using a pilot plant spray drier by manipulating its inlet temperature (150 °C-170 °C), outlet temperature (75 °C-85 °C) and MD concentration (15%-30%) as the independent variables while process yield, moisture content, water activity, hygroscopicity and bulk density were analysed as responses. The optimum conditions were obtained at an inlet temperature of 150 °C, outlet temperature of 75 °C and 18% of MD. MD concentration had the most significant ($p < 0.05$) effect on the powder properties. The WDF powder produced under optimum conditions was further investigated for its ability to support the growth of *Bifido longum*, *Lactobacillus casei* and *Salmonella spp.* Anaerobic growth of the bacteria at 37 °C was determined every 6 h for 24 h in four MRS media containing glucose, MD, fructooligosaccharides (FOS) and WDF powder as substrates. The results indicated that all the substrates significantly ($P < 0.05$) increased the growth of the probiotic bacteria; *B. longum* and *L. casei* and WDF powder gave the highest bacterial count. The number of pathogenic bacteria, *Salmonella spp.* did not differ significantly ($P > 0.05$) from its initial count in media containing FOS and WDF powder while glucose and MD significantly ($P < 0.05$) increased its numbers. These results revealed that WDF powder enhanced the growth of probiotic bacteria more than FOS and inhibited the pathogenic growth and as such can be a prebiotic source in the functional food industry.