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Abstract

Bioactive Properties of Blueberry Extracts Obtained by Different Drying Techniques against *Helicobacter pylori* †

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Abstract: *Helicobacter pylori* (*H. pylori*) is widely recognised as one of the most prevalent human pathogens, which infects more than 50% of the population worldwide. Chronic inflammation of the gastric mucosa is one of the main consequences of this infection and is related to the risk of developing gastric cancer. Currently, due to the high association between *H. pylori* infection and the progression of gastric cancer, most therapeutic treatments aim to eradicate the bacteria using different antibiotics in combination with a proton pump inhibitor in triple or quadruple therapy. However, resistant strains have increased significantly, requiring new therapeutic tools. Blueberries are rich in different bioactive compounds with antibacterial and anti-inflammatory properties that could contribute to reducing the problems associated with *H. pylori* infection. The aim of this research was to analyse the antibacterial and anti-inflammatory properties of different blueberry extracts (from Bluejay, Berkley, and Bluecrop varieties) obtained by different drying methods (freeze-drying (FD), vacuum drying at 50 °C, 70 °C and 90 °C (VD), and spray drying (SD)) against *H. pylori* infection. The results showed that all blueberry extracts exhibited antibacterial effects against *H. pylori*, with some of these extracts being bactericidal, while the rest reduced bacterial growth by more than 5 log CFU/mL. The Bluecrop extracts were the most active because all the extracts obtained by the different drying methods were bactericidal. The extracts obtained by vacuum drying (VD) at 50ºC were the most effective since the extracts of the three varieties were bactericidal. Regarding anti-inflammatory activity, all blueberry extracts reduced IL-8 secretion in the *H. pylori*-infected gastric cells. The Bluecrop extracts obtained by VD at 70 °C and 90 °C reduced IL-8 production by 30% and 32%, respectively. These results suggest that the blueberry extracts used in the present work and obtained by different drying methods could constitute a useful alternative for controlling *H. pylori* growth and in the modulation of the gastric inflammatory process induced in *H. pylori* infection.

Keywords: *Helicobacter*; blueberry extracts; drying methods; antibacterial activity; anti-inflammatory activity

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