

The total polyphenols and the antioxidant potentials of some selected cereals and pseudocereals

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Abstract The objective of the present study was to investigate the effect of phenolic substances and proteins on the antioxidant potentials in some cereals and pseudocereals and to compare their bioactivity. The polyphenol dry matter extracts (PDME) from the investigated seeds of buckwheat, rice, soybean, amaranth and quinoa with 1.2 M HCl in 50% methanol/water (PDME50%Met/HCl) exhibited higher inhibition of lipid peroxidation than the ones extracted with 50% methanol/water (PDME50%Met) and were comparable to the antioxidant activity of butylated hydroxyanisole at concentration of 0.2 mg mL⁻¹. The antioxidant activities of these seed extracts determined by 2,2'-azinobis (3-ethylbenzothiazoline-6-sulfonate)-ABTS^{•+}/K₂S₂O₈, β -carotene bleaching (β -carotene), and 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging methods showed high correlation coefficients (R^2) such as 0.9515, 0.9058 and 0.8723, respectively, with the presence of total polyphenols estimated by Folin-Ciocalteu assay. These results indicate that the major antioxidant components in these extracts mostly derived from the polyphenols, and proteins showed

only minimal values of bioactivity. Based on high contents of polyphenols, anthocyanins, flavonoids and their antioxidant activities pseudocereals such as buckwheat, quinoa and amaranth can be a substitute for cereals for common and atherosclerotic diets and sometimes in the allergic cases.

Keywords Seeds · Selected cereals · Pseudocereals · Antioxidants

Introduction

Celiac disease is owing to an intolerance of certain amino acid sequences of wheat gluten and corresponding fractions of other cereals. Certain cereals (rice, maize, sorghum and millet) and pseudocereals (amaranth, buckwheat and quinoa), rich in proteins and carbohydrates do not contain gluten. The grains and the products of these plants proofed their qualification and in some cases readiness for marketing was achieved [1, 2]. Therefore, in the last decade, the use

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