

Antioxidant activity of extracts from defatted and non-defatted flax (*Linum usitatissimum* L.) seeds

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INTRODUCTION

Flax, *Linum usitatissimum*, is an annual plant and member of the *Linaceae* family [1]. Flax is rich in fats (41%), proteins (20%) and dietary fibre (28%). Seeds of flax are the richest source of alpha-linolenic acid, lignans and other nutritional components. Flaxseed oil contains interesting bioactive compounds other than the fats [2]. The aim of this study was to estimate the total polyphenol content (TPC), free radical scavenging activity, and ferric reducing antioxidant power (FRAP) in extracts from defatted and non-defatted flax seeds. The results clearly show the impact of fatty acids on the effectiveness of this research.

EXPERIMENTAL METHODS

Samples of defatted milled flax seeds and non-defatted flax seeds (whole grains) were obtained from a local herbs store in Lodz, Poland. DPPH radical-scavenging capacity, ferric reducing antioxidant power assay (FRAP), and total polyphenol content (TPC) of defatted and non-defatted flaxseed extracts were determined, following the modified procedures.

RESULTS AND DISCUSSION

The obtained results have revealed that the ability of defatted flaxseed extracts to scavenge the DPPH radical was at the level from 19.7 to 76.1%, while the scavenging capacity of non-defatted flaxseed extracts ranged from 25.7 to 76.3%. Among the defatted and non-defatted flaxseed extracts, the second one has shown stronger ferric ion reducing activity with 0.062 ± 0.007 mmol TE/g of flaxseed extract. Studies on the total polyphenol content of flaxseed extracts demonstrate a higher amount of polyphenols in defatted flaxseed extracts (98.8 mg/100g). It was observed that non-defatted flaxseed extracts contain nearly one-third less polyphenols (61.3 mg/100g) compared to defatted flaxseed extracts.

CONCLUSIONS

So far, in most of the studies defatted flax seeds have always been investigated. This study shows that the process of degreasing has an influence on the antioxidant activity. It was confirmed that non-defatted seeds are the richer source of antioxidants. Flax seeds should be explored not only without fat phase, but also as whole seeds. The implementation of full flax seeds in foods should be further investigated and could give rise to novel foods beneficial for human health.

REFERENCES

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2. Teh S.S. et al., J. Food Compos. Anal. 30:26-31, 2013.

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