

# Blackcurrant and Flaxseed Fibres: Superfoods?



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# The Products

- **Flaxseed Fibre**

Is also known as defatted flaxseed and is produced by drying and milling the cake after low temperature expelling of the whole seed (*Linum usitatissimum*) to produce flaxseed oil.

- **Blackcurrant Fibre**

Is produced by drying and milling the Pomace (fruit skins) after pressing Blackcurrants for juice and then removing the seeds for oil production.

# Blackcurrant Fibre



# Flaxseed Fibre



# Composition Analysis

Nutrient	Blackcurrant Fibre	Flaxseed Fibre
	%m/m	%m/m
Protein	12.6	32
Dietary Fibre	64	37
Carbohydrates (by difference)	6.3	3.2
Ash	1.9	4.8
Moisture	11.4	7
Oil content	3.8	15

# Blackcurrant Fibre – Analysis of Actives

- Through analysis with ESR (a NZ crown research Institute), found to contain significant quantities of anthocyanins as well as other polyphenolics.
- **TOTAL ANTHOCYANINS 1200-1300 mg/100g**
  - **Delphindin and Cyanidin**
- Potential for use in functional foods or nutraceuticals

# Pharmacological actions of Blackcurrant

- Antioxidant
- Anti-inflammatory
- Carcinostatic
- Venotonic
- Vision enhancing
- Cardioprotective

# Heart Health

Several small clinical trials have shown blackcurrants or their extracts to reduce cardiovascular risk factors:

- Increased HDL and reduced LDL
- Improving endothelial function
- Antiplatelet
- Reduced atherosclerosis progression
- Improved exercise performance and recovery

Wallace, T. C. (2011). Anthocyanins in cardiovascular disease. *Adv Nutr*, 2(1), 1-7. doi: 10.3945/an.110.000042



# Eye Health

Anthocyanins from berries have demonstrated positive effects on

- Cataracts
- Glaucoma
- Diabetic retinopathy
- Due to their antioxidant effect and by improving retinal blood circulation.
- Pojer, E., Mattivi, F., Johnson, D. and Stockley, C. S. (2013). The case for anthocyanin consumption to promote human health: A review. *Comprehensive Reviews in Food Science and Food Safety*, 12: 483–508. doi:10.1111/1541-4337.12024

# Gut Health – A Novel Prebiotic?

- A recent trial indicated berry extracts:
  - Increased the numbers of Lactobacilli and Bifidobacterium.
  - Antimicrobial activity against *H. pylori* and *S. aureus*.
  - Reduced the activity of B-glucoronidase (associated with colon cancer).

Molan, A. L., Liu, Z., & Plimmer, G. (2014). Evaluation of the effect of blackcurrant products on gut microbiota and on markers of risk for colon cancer in humans. *Phytother Res*, 28(3), 416-422. doi: 10.1002/ptr.5009

# Cognitive function

- Animal studies and one preliminary human trials indicate benefits to cognition and memory through:
  - Reduced inflammation
  - Increased blood flow
- Watson, A. W., Haskell-Ramsay, C. F., Kennedy, D. O., Cooney, J. M., Trower, T., & Scheepens, A. (2015). Acute supplementation with blackcurrant extracts modulates cognitive functioning and inhibits monoamine oxidase-B in healthy young adults. *Journal of Functional Foods*, 17, 524-539. doi: <http://dx.doi.org/10.1016/j.jff.2015.06.005>

# Applications of Blackcurrant Fibre

- A source of extractable anthocyanins.
- A natural food colour additive.
- A high fibre natural food additive
- For use in breads, baked goods, yogurt, dried fruit powders, berry supplements.
- Synergy with Flaxseed Fibre?



# Flaxseed Fibre – Active Constituents

- Alpha linolenic acid (ALA)
- Dietary fibre (Mucilage)
- Lignans (SDG) - 650 mg/100g
- Also - Protein, minerals and vitamin E.
- Synergy and improved stability compared to whole flax.

# Actions of Flaxseed Fibre

- Hypocholesterolemic
- Anti-inflammatory
- Antiarrhythmic
- Hypotensive
- Anti-cancer?
- Bulk laxative and Prebiotic
- Phytoestrogen

# Heart health

- Every 1g per day increase in ALA reduces risk of CHD by 10%.
- In Canada there is now an approved health claim for the use of flax to reduce cholesterol. Flax reduces both total and LDL without altering HDL.
- Reduces Lipoprotein a.
- Flax reduces blood pressure

Khalesi, S., Irwin, C., & Schubert, M. (2015). Flaxseed consumption may reduce blood pressure: a systematic review and meta-analysis of controlled trials. *Journal of Nutrition*, 145(4), 758-765. doi: 10.3945/jn.114.205302

Pan, A., Chen, M., Chowdhury, R., Wu, J. H., Sun, Q., Campos, H., . . . Hu, F. B. (2012). alpha-Linolenic acid and risk of cardiovascular disease: a systematic review and meta-analysis. *American Journal of Clinical Nutrition*, 96(6), 1262-1273. doi: 10.3945/ajcn.112.044040



# Other health effects – Provisional evidence

- Prostate and Breast Cancer
- Menopause symptoms
- Osteoporosis
- Arthritis
- Gut health
- Diabetes

# HealthyBread:

Fibre,anthocyanins,lignans,omega-3 (ALA)



# Nutritional Oils

- Co-products from these dietary fibres include nutritional oils which are sources of essential fatty acids.
- Such as Flaxseed oil, blackcurrant seed oil and evening primrose oil plus virgin rapeseed oil
- These have been cold pressed,
- High quality low oxidation values



# Further reading

Blackcurrent, Eyres, Food NZ, Oct/Nov. 2016.p 25-28

Flaxseed, Eyres, Food NZ 2015

Nutraceutical Oils, Handbook of Australasian Edible oils, (2007)

Moreau, A. (2009), Gourmet and Health Promoting Specialty Oils. AOCS Press, P237

# Samples for evaluation

This review was sponsored by Midlands Seed Ltd (Midlands), Ashburton, Canterbury, New Zealand. The company was established in 1990, to support and encourage the production and export of arable crops from New Zealand.

