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 usitatissium*) 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

Brown Flax Flour (fibre)

Ground Flaxseed
<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Blackcurrant Fibre</th>
<th>Flaxseed Fibre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>12.6 %m/m</td>
<td>32 %m/m</td>
</tr>
<tr>
<td>Dietary Fibre</td>
<td>64</td>
<td>37</td>
</tr>
<tr>
<td>Carbohydrates (by difference)</td>
<td>6.3 %m/m</td>
<td>3.2</td>
</tr>
<tr>
<td>Ash</td>
<td>1.9 %m/m</td>
<td>4.8</td>
</tr>
<tr>
<td>Moisture</td>
<td>11.4 %m/m</td>
<td>7</td>
</tr>
<tr>
<td>Oil content</td>
<td>3.8 %m/m</td>
<td>15</td>
</tr>
</tbody>
</table>
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 neutraceuticals
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

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.

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).

Cognitive function

• Animal studies and one preliminary human trials indicate benefits to cognition and memory through:
  
  • Reduced inflammation
  • Increased blood flow

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
- Antiarrhythmnic
- 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


Other health effects – Provisional evidence

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

Flaxseed, Eyres, Food NZ 2015
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.