

## **From the sea to seed: DHA canola offers a land-based solution for sustainable production of long-chain omega-3 fatty acids**

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### **Abstract**

Omega-3 long-chain polyunsaturated fatty acids ( $\omega$ 3-LCPUFA) are nutritionally important for both human and animal health, yet the marine sources of these nutrients are under pressure due to over-fishing and increasing demand. Having a crop-based solution will not only allow for stable and sustainable production of these essential nutrients, but also play a critical role in reducing dependence on wild fish stocks. Canola has a high oil content with efficient production costs, making it an ideal candidate for production of  $\omega$ 3-LCPUFA. Nuseed has developed DHA canola which is the first land-based source of  $\omega$ 3-LCPUFA that has received regulatory approvals for commercialization. DHA canola is also the first biotech innovation that has been certified by the Friend of the Sea to recognize its contributions to nutritional and environmental sustainability. One hectare of DHA canola has the potential to provide the omega-3 oil produced from 10,000 kg fish, demonstrating it is a cost-effective and reliable alternative to fish oil, typically sourced from wild-caught fish. Currently, about 75% of fish oil is used for aquacultural feed and the remainder for human nutrition. Commercial scale fish trials and a human clinical trial have confirmed that DHA canola is a viable, safe and effective nutrient source for  $\omega$ 3-LCPUFA. A recent consumer study revealed preference for a plant-based alternative to fish oil, driven by a combination of organoleptic and environmental concerns. In summary, DHA canola offers a land-based option to produce this important nutrient and helps address the complex interplay of agriculture, aquaculture and human nutrition through a sustainable bio-innovation. This presentation will introduce a novel innovation that delivers the nutrition of marine resources through renewable canola and its sustainable benefits.

**Key words:** omega-3, DHA canola, land-based innovation, nutrition, sustainable agriculture