

Anti-inflammatory and Immune Enhancing Effects Produced by Plant Based Oils (Chia Seed Oil, Black Cumin Oil, and Palm Oil)

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Chia (*Salvia hispanica L*) is a tropical and subtropical climates herbaceous plant from the mint family (*Lamiaceae*) which produces tiny, flavorless and white or dark brown seeds. Chia seeds have oval shape with approximately 1.9 - 2 mm long, 1 - 1.4 mm wide and 0.8 – 1 mm thickness diameter.¹ Chia seed oil is extracted from the seeds and has been shown to be quite effective in producing health benefits ranging from reducing inflammation to fighting cancer.

Chia seeds are high in protein, fiber and omega-3s, making them an excellent way to support metabolic health.

A study published in the journal, Diabetes, found that a diet high in monosaturated omega-9 fats, like the oil extracted from chia seeds, can reduce inflammation and improve insulin sensitivity.²

Chia seeds are rich in alpha lipoic acid (ALA) which is an omega-3 fatty acid. In 2013, the Journal of Molecular Biochemistry found that ALA limited the growth of cancer cells in both breast and cervical cancers. Researchers also found that it caused cell death of the cancer cells without harming the normal healthy cells. While more research still needs to be done to find out the deeper implications of ALA on fighting certain kinds of cancer, this is a great discovery for women struggling with these increasingly common types of cancer. (Deshpande, Mansara, Suryavan, & Kaul-Ghanekar, 2013)

Out of the several accompanying articles found in the tomb of Egyptian Pharaoh Tutankhamun were the seeds of black cumin (*Nigella sativa*).⁴ Not to be mistaken with common cumin seed (*Cuminum cyminum*), it is a spice that grows in the Mediterranean region in western Asian countries including India, Pakistan, and Afghanistan. The historical references to these seeds are also found in some of the oldest religious and medical texts. For example, it is referred to as 'Melanthion' by Hippocrates and Dioscorides, while the Bible describes it as 'curative black cumin' (Isaiah 28:25, 27 NKJV).

Black cumin seed (*Nigella sativa*) oil extracts have been used for many centuries for the treatment of many human illnesses, and more recently the active compound found in black seed oil, viz. thymoquinone (TQ) has been tested for its efficacy against several diseases including cancer. The TQ extracted from the black cumin seeds are shown to have a significant antioxidant role and improves body's defense system, reduces apoptosis and controls Akt pathway. Although the anti-cancer activity of *N. sativa* components was recognized thousands of years ago, but proper scientific research

with this important traditional medicine is a history of last 2~3 decades.⁵

In February 1995, doctors at the King's College London, U.K. tested black seed oil use for rheumatism and inflammatory diseases.⁶ They concluded that their studies supported the traditional use of *Nigella sativa* as a treatment for rheumatism and related inflammatory diseases.

In 1960, Professor El-Dakhakny reported that black seed oil has an anti-inflammatory effect and that it could be useful for relieving the effects of arthritis.

In 2002, at the Alexandria Medical Faculty, Alexandria, Egypt he also studied the effectiveness of nigellone and thymoquinone whereby his research partly explained the mode of action of black seed's volatile oils in ameliorating inflammatory diseases.⁷

Palm oil is one of the few fatty fruits in existence; it is likely to hold a substantial place in the human diet and is the second most consumed vegetable oil in the world. It is different from other plant and animal oils in its fatty acid composition (50% saturated, 40% unsaturated and 10% polyunsaturated).⁸ In one study published in the British Journal of Biomedical Science, it was reported that despite the high levels of saturated fat in palm oil, the oil did not contribute to atherosclerosis or arterial thrombosis.⁹ But in addition to MCFAs, palm oil is also enriched with the following phytonutrients: carotenoids (alpha-beta-and gamma-carotenes), sterols (sitosterol, stigmasterol, and campesterol), water-soluble powerful antioxidants, phenolic acids, and flavonoids. Tocotrienol and tocopherol make up 70% to 30% of the vitamin E present in red palm oil respectively.¹⁰ The tocotrienols have been suggested to inhibit HMG-CoA reductase enzyme activity and thus regulate serum cholesterol.¹¹

Arthritis is an inflammatory joint disease that results in destruction of the articular cartilage. In one specific study, palm tocotrienol fractions from palm oil have been shown to possess anti-inflammatory effects and provide (a potential) new nutrient for reducing arthritis. The results of this study

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revealed that the use of palm oil tocotrienols significantly down regulated the production of COX-2, IL- β , IL-6 and MMP-3 in arthritis.

In addition, palm tocotrienol fraction induced TIMPs that produce anti-inflammatory effect to block inflammation directly in arthritis. These findings show that palm tocotrienol fractions may be of potential therapeutic value in regulating the joint destruction in arthritis.¹²

Plant base oils are readily available and as research has shown, they can have significant effects on blocking inflammatory processes as well as enhancing immune function. Although there is a lack of studies showing the effect of all three of these plant based oils used together and demonstrating their combined effects, it stands to reason that the cumulative effects would provide profound health benefits for those who consume them.

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