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Effect of saffron, black seed, and their main constituents on inflammatory cytokine response (mainly TNF- α) and oxidative stress status: an aspect on pharmacological insights

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Abstract

Tumor necrosis factor- α (TNF- α), an inflammatory cytokine, is produced by monocytes and macrophages. It is known as a 'double-edged sword' because it is responsible for advantageous and disadvantageous events in the body system. The unfavorable incident includes inflammation, which induces some diseases such as rheumatoid arthritis, obesity, cancer, and diabetes. Many medicinal plants have been found to prevent inflammation, such as saffron (*Crocus sativus* L.) and black seed (*Nigella sativa*). Therefore, the purpose of this review was to assess the pharmacological effects of saffron and black seed on TNF- α and diseases related to its imbalance. Different databases without time limitations were investigated up to 2022, including PubMed, Scopus, Medline, and Web of Science. All the original articles (in vitro, in vivo, and clinical studies) were collected on the effects of black seed and saffron on TNF- α . Black seed and saffron have therapeutic effects against many disorders, such as hepatotoxicity, cancer, ischemia, and non-alcoholic fatty liver, by decreasing TNF- α levels based on their anti-inflammatory, anticancer, and antioxidant properties. Saffron and black seed can treat a variety of diseases by suppressing TNF- α and exhibiting a variety of activities such as neuroprotective, gastroprotective, immunomodulatory, antimicrobial, analgesic, antitussive, bronchodilator, antidiabetic activity, anticancer, and antioxidant effects. To uncover the beneficial underlying mechanisms of black seed and saffron, more clinical trials and phytochemical research are required. Also, these two plants affect other inflammatory cytokines, hormones, and enzymes, implying that they could be used to treat a variety of diseases.

Keywords: Antioxidants; Crocus; Cytokines; *Nigella sativa*; Phytochemicals; Tumor Necrosis Factors.

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