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Curcumin and Fish Oil: Potential Alternative or Adjunctive Treatments to NSAIDs and Immune Modulating Medications for the Treatment of Chronic Inflammation
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Abstract

- The aim of the present review is to evaluate the efficacy and safety of curcumin and fish oil as alternative or adjunct treatments to NSAIDs and immune modulating medications for the treatment of chronic inflammation.
- An online search of CINAHL, PubMed, Cochrane and Alt Healthwatch databases was conducted. It was limited to peer-reviewed articles and clinical trials in academic journals within the last ten years.
- Current research suggests that curcumin may be efficacious in the treatment of chronic inflammation. It is generally regarded as safe up to 12 g/day with mild gastrointestinal effects but poor bioavailability has limited its clinical application.
- Current research provides evidence that fish oil is efficacious for the treatment of chronic inflammation as a variety of chronic diseases. It is generally regarded as safe at doses of 3 g/day with mild gastrointestinal effects and no increased risk of bleeding.
- In vitro studies have demonstrated a synergistic anti-inflammatory effect when curcumin and fish oil are used concomitantly.

Introduction

- Research has demonstrated that chronic inflammation may drive many chronic diseases.
- Despite advances in the treatment of these complex chronic diseases their occurrence rates have continued to increase.
- High costs and adverse effects of standard anti-inflammatory treatments have prompted patients to seek more cost-effective and non-toxic agents for their management.
- It is estimated that approximately 50% of Americans are consuming dietary supplements to promote health and wellness.
- Curcumin and fish oil are two dietary supplements with demonstrated anti-inflammatory properties.

Statement of the Problem

- Non-steroidal anti-inflammatory drugs (NSAIDs) and immune modulating medications are the mainstays of treatment for chronic inflammation yet their use is associated with a variety of adverse effects which can limit or prevent their use.
- Methodologically robust studies are needed to evaluate if dietary supplements can be developed as alternative or adjunct treatments for chronic inflammation.

Research Questions

- In patients with chronic inflammatory processes, is curcumin more effective with fewer adverse effects than NSAIDs and immune modulating agents at reducing inflammation?
- In patients with chronic inflammatory processes, is fish oil more effective and with fewer adverse effects than NSAIDs and immune modulating agents at reducing inflammation?
- In patients with chronic inflammatory processes, does concomitant administration of curcumin and fish oil elicit a synergistic anti-inflammatory effect?

Literature Review

Inflammation, Chronic Disease and Anti-Inflammatory Mechanisms of Curcumin and Fish Oil

- Chronic inflammation creates a prolonged state of oxidative stress and damage which may lead to the progression of many chronic inflammatory and degenerative disorders.
- Curcumin exerts its anti-inflammatory effects by downregulating inflammatory cytokines, enzymes and transcription factors.
- Fish oil exerts its anti-inflammatory effects by inhibiting neutrophil recruitment, blocking production of pro-inflammatory prostaglandins, leukotrienes, and cytokines, and inducing macrophage phagocytosis and apoptotic cells.

Safety and Efficacy of Curcumin and Immune Modulating Agents

- Panahi et al. found that in patients with osteoarthritis, analgesics and NSAIDs were the mainstays of treatment and their long-term use has been associated with adverse effects.
- A systematic review by Garg et al. found the use of sulphasalazine, mesalamine and immunosuppressives is efficacious for the treatment of ulcerative colitis but is associated with high rates of adverse effects.
- According to Chander & Goel common adverse effects include gastrointestinal bleeding, fluid retention, renal toxicity, cardiovascular effects, accelerated osteoporosis, myelosuppression, hepatotoxicity, ocular and auditory toxicity and increased risk of infection.

Safety and Efficacy of Fish Oil

- Biglford & Rossi found no significant differences in cognitive scores and/or biological features of Alzheimer’s disease with unenhanced curcumin but found it safe and tolerable up to 12 g/day.
- Panahi et al. found 1500 mg/day of curcumin enhanced with Bioperine may be efficacious in alleviating symptoms without significant adverse effects in patients with knee osteoarthritis and significantly decreased SARS use.
- According to Chander & Goel common adverse effects include gastrointestinal bleeding, fluid retention, renal toxicity, cardiovascular effects, accelerated osteoporosis, myelosuppression, hepatotoxicity, ocular and auditory toxicity and increased risk of infection.

Applicability to Clinical Practice

- In patients who desire to use dietary supplements to treat chronic inflammation there is evidence that curcumin and fish oil may be efficacious with only mild gastrointestinal adverse effects and may help reduce NSAID use.
- Curcumin is efficacious in doses ranging from 300 mg/day to 12 g/day in a variety of chronic diseases. A bioavailability enhanced formulation should be used.
- Fish oil may be efficacious in a variety of chronic diseases at a dose of 3 g/day to 12 g/day. There does not appear to be evidence to support the efficacy and safety of higher doses.

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