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Effect of Omega-3 Fatty acids Intake From Natural Sources On osteoarthritis Patients

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Abstract

"Effect of Omega-3 Fatty acids Intake From Natural Sources On Osteoarthritis Patients"

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The study aimed for: Evaluating the effects of different sources of Omega-3 Fatty acids (ω−3FAs) intake on blood categories & blood pressure level, clinical parameters, x-ray and anthropometric measurements in osteoarthritis (OA) patients. It was conducted on 200 females OA patients aged from (35-61yrs). They were devided to 4 groups (each 50): (1) treated with physiotherapy only (3sittings/week) for three months. (2) treated with (ω−3FAs) capsules (3 capsules/day) for three months+ physiotherapy, (3) treated with linseed oil intake (5mg/day) for two months separated by one month + physiotherapy, and (4) treated with fish or salamon (350gm/week) for three months+ physiotherapy. All patients were using non-steroidal anti-inflammatory drugs (NSAIDs), and eating their normal foods. They were submitted to clinical and rheumatological examinations, laboratory investigations and anthropometric measurements. Results revealed that mean level of cholesterol was sig. reduced in patients at ($P<0.01$, $P<0.000$, $P<0.05$) respectively. Also, serum triglycerides concentration and (WBCs) were sig. decreased in (groups 3&4) at ($P<0.01$&$P<0.05$). Blood glucose was sig. decreased in OA patients taking (ω−3FAs) (groups2,3,4) at ($P<0.000$). Also, (ESR) was sig. decreased in patients taking (ω−3FAs) (groups2,3,4). Omega-3 fatty acids from capsules, or linseed oil or fish decreased the systolic blood pressure at ($P<0.05$). Also, it was clear that knee joints which are affected were the most common, while hip joints were the least. Also, capsules source of (ω−3FAs), flaxseed oil and fish was improved some clinical parameters (pain, and morning stiffness), but didn't improve crepitus, x-ray and weight except in case of capsule source of (ω−3FAs) in OA patients.

Key Words: Osteoarthritis (OA), Omega-3 Fatty Acids (ω−3FAs), White Blood Cells (WBCs), and Erthrocyte Sedimentation Rate (ESR).

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Aim of the Study

The aims of the present study are :

1- Studying effects of omega-3 fatty acids intake from natural sources on osteoarthritis patients.

2- Studying the chemical source as a comparative to know which source of omega-3 fatty acids lead to excellent results for osteoarthritis patients in improvement the clinical signs, laboratory analysis and anthropometric measurements.

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OA	: Osteoarthritis
(ω−3FAs)	: Omega-3 Fatty Acids
HT	: Height
AC	: Arm circumference
AMC	: Arm muscle circumference
TSF	: Triceps skinfold
CHOL	: Cholesterol
HGB	: Hemoglobin
WBC	White blood cells
ESR	Erythrocyte sedimentation rate
NSAIDs	Non-Steroidal Anti Inflammatory Drugs

Introduction

Osteoarthritis (OA) is known as degenerative arthritis. Degenerative joint which cause clinical syndrome inflammation initiate pain in the joints, caused by abnormal cartilage that covers and acts as a cushion inside the joints and destruction or decrease of synovial fluid that lubricates those joints. So the bone surfaces become less well protected by cartilage. The patient experiences pain upon weight bearing, including walking and standing. Due to the decreasing in movement and pain results. The regional muscles may become atrophy, and ligaments may become more lax (Conaghan & Phillip, 2008). Many nutritional supplements have been used for treatment of OA. Omega-3 fatty acids provide pain relief from OA (McAlindon et al.,1996).

Omega-3 fatty acids (ω−3FAs) can't be synthesized by mammals, It must be taken through diet . It is composed of unsaturated fatty acids and have in common a carbon–double bond in the *n−3* position (Watkins et al., 2001). The ω−3FAS are present as Alpha **α-** -Linolenic Acid (ALA), and can be derived to Eicosapentaenoic Acid (EPA)and Docosahexaenoic Acid (DHA). The human body cannot synthesize ω−3FAs, but it can form 20-and 22-carbon unsaturated *n-3* fatty acids from the eighteen-carbon *n-3* fatty acids. These conversions occure competitively with *n-6* fatty acids, which are essential and closely related to chemical analogues that are derived from linoleic acid. Both the *n-3* (ALA) and *n-6* (ALA) are essential nutrients which must be obtained from food. Synthesis of the longer *n-3* fatty acids from linolenic acid within the body is competitively

slowed by the *n-6* analogues. Thus accumulation of long chain *n-3* fatty acids in tissues are more effective when they are obtained directly from food or when competing amounts of *n-6* analogues do not greatly exceed the amounts of *n-3*. The healthy ratio of *n-6*: *n-3* range from 1:1 to 4:1 (Simopoulos et al., 2000).

Sea foods and nut oils are the primary dietary source of (ω−3FAs). Salmon, flaxseeds and walnuts are excellent sources of (ω−3FAs). Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) are found in cold-water fish such as salmon, mackerel, halibut, sardines, tuna, and herring. ALA is found in flaxseeds, flaxseed oil, canola (rapeseed) oil, soybeans, soybean oil, pumpkin seeds, pumpkin seed oil, purslane, perilla seed oil, walnuts, and walnut oil. Researches indicate that (ω−3FAs) may be better absorbed from food than supplements (Kris-Etherton et al., 2000).

This research studies three different sources from (ω−3FAs), the first from chemical source (capsules), the second from plant source (linseed oil) and the third from animal source (fish or salamon). The present study is an attempt to evaluate the effect of different sources of (ω−3FAs) on some blood categories, blood pressure, clinical parameters, x-ray and anthropometric measurements in OA patients.