NUTRITION AS A COMPLEMENTARY THERAPY IN RHEUMATIC DISEASES

Essay

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LIST OF ABBREVIATIONS

Abbrev.	Meaning
AA	Arachidonic acid
Ab	Antibody
AI	Adequate Intake
ALA	Alpha-linolenic acid
AMA	Arm muscle area
BMI	Body mass index
C	Cup
Calorie	Kilocalorie
CHD	Chronic heart disease
CIA	Collagen-induced arthritis
CRP	C-reactive protein
CSF	Colony -stimulating factors
CVD	Cardiovascular disease
DASH	Dietary Approaches to Stop Hypertension
DHA	Docosahexaenoic acid
DMARDs	Disease modifying antirheumatic drugs
DRIs	Dietary intake standards
DVs	Daily Values
EFA	Essential fatty acid
EGCG	Epigallocatechin-3-gallate
EPA	Eicosapentaenoic acid
ESR	Erythrocyte sedimentation rate
FDA	Food and Drug Administration
FRAP	Ferric reducing antioxidant power
g	Grams

LIST OF ABBREVIATIONS (Cont...)

Abbrev.	Meaning
GFR	Glomerular filtration rate
GI	Glycemic Index
GLA	Gamma-linolenic acid
GT	Green tea
HBV	High biologic value
HBV	High biologic value
HDL	High density lipoprotein
HOPO	High oleic palm olein
IBD	Inflammatory bowel disease
IBW	Ideal body weight.
ICAM-1	Intercellular adhesions molecule-1
ILs	Interleukins
INOS	Inducible NO-synthetase
IU	International Units
kcal	Kilocalories.
KDOQI	Kidney Dialysis Outcome Quality Initiative
kg	Kilogram
LA	Linoleic acid
LCDs	Low caloric diets
LDL	Low density lipoprotein
LE	Licorice
LF	Living food
LPS	Lipopolysaccharide
LR	Laminin receptor

LIST OF ABBREVIATIONS (Cont...)

Abbrev.	Meaning
LT	Leukotriene
mcg	Microgram
mg	Milligrams
MNT	Medical Nutrition Therapy
n-3	Omega-3
n-6	Omega-6
NF-kappaB	Nuclear factor-kappa B
NO	Nitric oxide
NSAIDs	Non steroidal anti inflammatory drugs
OA	Osteoarthritis
Oz	Ounze=28.2gm,
PAD	Peripheral arterial disease
pc	Piece
PGs	Prostaglandins
PHSO	Partially hydrogenated soybean oil
PST	Palm stearin
PUFA	Poly unsaturated fatty acid
RA	Rheumatoid arthritis
RDAs	Recommended Dietary Allowances
RDIs	Recommended daily intakes
SLE	Systemic lupus erythematosus
tbs	Table spoon
TNF	Tumor necrosis factors
Tollip	Toll-interacting protein
tsp	Tea spoon
USA	United States of America
USDA	United States Department of Agriculture
VCAM-1	Vascular cell adhesion molecule-1
VDRs	Vitamin D receptors

INTRODUCTION

Rheumatic diseases are chronic systemic inflammatory diseases of unknown etiology. They can affect any age causing articular and extra-articular manifestations leading to disabilities and increased morbidity and mortality among affected patients. They are either autoimmune or degenerative in nature ***(Morgan and Baggot, 2006).***

No curative treatment for rheumatic disorders exists, but medical nutrition therapy (MNT) may play an additional role in their management and holds promise for patients. Pharmacotherapy, physical therapy, occupational therapy, and MNT can help to improve the manifestations of rheumatic disorders. Alternative diet therapies, supplements, and programs currently under investigation promise to reduce the need for high doses of toxic medications and to alleviate some of the rheumatological complaints ***(Mahan and Escott-Stump, 2008-a*).**

Since rheumatic disease is likely linked to other chronic diseases in the same patient such as diabetes, cardiovascular disease, and obesity, which have an additional nutritional component, MNT should provide the optimal balance of immediate relief from rheumatic symptoms and preservation of short term health and long term management of the comorbidities ***(Mahan and Escott-Stump, 2008-b).***

Dietary Supplementation with omega-3 fatty acids in patients with active RA results in significant beneficial clinical effects and may decrease the need for non steroidal anti-inflammatory drugs (NSAIDs) or disease modifying anti-rheumatic drugs (DMARDs) ***(Geusens et al., 1994 and Duncan, 2008).***

The benefits of olive oil as a component of a healthy diet are well established ***(Wahle et al., 2004).*** Researches suggest that it may be used as an alternative to medication ***(Beauchamp et al., 2005).***

The addition of an antioxidants, like vitamine C (in guava, kiwi and green peppers), the tocopherols (in almonds) and B-carotene (in sweet potato) would be required to improve the oxidative stability of olive oil ***(Darlington and Stone, 2001).***

A gluten-free vegan diet, containing vegetables, root vegetables, nuts, fruits, buckwheat, corn, rice, sunflower seeds, and unshelled sesame seeds in the form of sesame milk as a source of calcium, giving 10% protein energy level of the total energy intake, 60% carbohydrates and 30% fat. This diet can induce changes in Rheumatoid Arthritis that are potentially athero-protective and anti-inflammatory, leading to significant lower levels of ESR, CRP, total cholesterol, LDL, oxidized LDL (oxLDL) and TGs and also reduces disease activity symptoms by decreasing number of swollen and tender joints ***(Elkan, 2008).***

Decreased oxLDL levels by vegan diet is very beneficial as it has many pro-inflammatory and immune stimulatory properties, including activation of T cells and monocytes/macrophages **(*Shoenfeld and Toubi, 2005)*.**

MNT for rheumatic diseases includes for example: Nutrition Management for rheumatoid arthritis: healthful balanced diet, avoidance of possible food allergens, adequate B vitamins, adequate calcium and vitamin D, omega-3 fatty acids, fasting followed by vegetarian diet and mediterranean diet, which is characterized by high consumption of legumes, cereals, fruites and vegetables, moderate consumption of milk and dairy products and low consumption of meat and meat products ***(Duncan, 2008).***

Nutrition Management for osteoarthritis includes balanced diet appropriate for weight loss or maintenance of appropriate weight, omega-3 fats, adequate calcium and vitamin D and consideration of glucosamine and chondroitin ***(Duncan, 2008).***

AIM OF THE WORK

The aim of the work is to highlight the role of nutrition therapy as a safe and hopeful additional modality in the management of some rheumatic diseases to minimize or avoid the hazardous side effects of the traditional pharmacologic therapy.

BASIC NUTRITION

What do we mean by nutrition?

The term nutrition refers to the science of how living organisms obtain and use food to support all the processes required for their existence. Substances in foods required or used by the body are called nutrients; they support and fuel all we do. There are also many other substances present in food appear to have health benefits such as decreasing the risk for cancer and heart disease. Clearly, the definition of what is nutrient is evolving, and the list of established nutrients will likely expand as researchers learn more about how the thousands of substances found in foods can promote health and wellbeing ***(McGuire and Beerman, 2010).***

Nutrients and Nonnutrients

Not all compounds in food are nutrients, foods contain nutrients and nonnutrients for example when you examine a food label many of these compounds, such as the artificial colors, are not nutrients because your body does not use them to support its basic functions. In general, scientists classify nutrients into six categories based on their chemical structure and composition: carbohydrates, proteins, lipids, water, minerals, and vitamins ***(de Kok et al., 2008).***

Essential and nonessential nutrient

Although our bodies can theoretically use all the nutrients in foods, we only need to consume some of them. These nutrients are referred to as the essential nutrients. Essential nutrients must be obtained from diet, because your body needs them and either cannot make them at all or cannot make them in adequate amounts. These are carbohydrates, essential amino acids, essential fatty acids, vitamins, minerals and water. All humans require the same set of essential nutrients, but the amount needed varies based on age, body size, gender, genetic traits, growth, illness, lifestyle habits, medication use, and pregnancy and lactation ***(Bansal and Garg, 2008).***

Nonessential nutrients are those food components that, if necessary your body can make in amounts needed to satisfy its physiological requirements for example cholesterol, creatine, and glucose. Hence, you do not actually need to consume the nonessential nutrients. Most foods contain a mixture of essential and nonessential nutrients. For example, milk contains a variety of essential vitamins and minerals (such as vitamin A and calcium) as well as several nonessential nutrients (such as cholesterol). However, there are situations when a normally nonessential nutrient can become essential. During these times, the nutrient is called a conditionally essential nutrient ***(Bansal and Garg, 2008).***

Macronutrient and micronutrient

Nutrients are also classified into macronutrients versus micronutrients based on how much of them we require from the