1998360072

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1998360072 EMBASE

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Moderate intake of n-3 fatty acids for 2 months has no detrimental effect on glucose metabolism and could ameliorate the lipid profile in type 2 diabetic men: Results of a controlled study.

AU

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Diabetes Care, (1998) Vol. 21, No. 5, pp. 717-724. .
Refs: 39
ISSN: 0149-5992 CODEN: DICAD2

CY

United States

DT

Journal; Article

FS

003 Endocrinology
029 Clinical Biochemistry
037 Drug Literature Index

LA

English

SL

English

ED

Entered STN: 19 Nov 1998
Last Updated on STN: 19 Nov 1998

AB

OBJECTIVE - To evaluate the effect of a moderate dose of fish oil on glycemic control and in vivo insulin action in type 2 diabetic men with elevated plasma triacylglycerols and to determine the effect of the same treatment on gene expression of GLUT4, lipoprotein lipase (LPL), and hormone- sensitive lipase (HSL) in the abdominal adipose tissue. RESEARCH DESIGN AND METHODS - A total of 12 type 2 diabetic men were randomly allocated to 2 months of 6 g daily of either fish oil or sunflower oil, separated by a 2- month washout interval, in a double-blind crossover design. RESULTS - For glucose metabolism, 2 months of fish oil supplementation compared with sunflower oil led to similar fasting plasma insulin, glucose, and HbA(1c). Basal hepatic glucose production did not increase after fish oil. There was no difference in insulin suppression of hepatic glucose production nor in insulin stimulation of whole-body glucose disposal measured by the euglycemic-hyperinsulinemic clamp. Fish oil did not ameliorate the low mRNA level of GLUT4 in adipose tissue of these patients. For lipid profile, fish oil lowered plasma triacylglycerol more than sunflower oil ($P < 0.05$) and tended to increase the amount of mRNA of both LPL and HSL in adipose tissue. CONCLUSIONS - A moderate dose of fish oil did not lead to deleterious effects on glycemic control or whole-body insulin sensitivity in type 2 diabetic men, with preserved triacylglycerol-lowering capacities.

CT

Medical Descriptors:
*non insulin dependent diabetes mellitus: DT, drug therapy
*fat intake
glucose homeostasis
gene expression regulation
enzyme synthesis
protein expression
glucose blood level
cholesterol blood level
lipoprotein blood level
triacylglycerol blood level
insulin blood level
human
male
clinical article
clinical trial
double blind procedure
crossover procedure
controlled study
adult

oral drug administration
article
Drug Descriptors:
*sunflower oil: CT, clinical trial
*sunflower oil: CM, drug comparison
*sunflower oil: DT, drug therapy
*omega 3 fatty acid: CT, clinical trial
*omega 3 fatty acid: CM, drug comparison
*omega 3 fatty acid: DT, drug therapy
*fish oil: CT, clinical trial
*fish oil: CM, drug comparison
*fish oil: DT, drug therapy
glucose: EC, endogenous compound
triacylglycerol: EC, endogenous compound
cholesterol: EC, endogenous compound
high density lipoprotein cholesterol: EC, endogenous compound
lipoprotein a: EC, endogenous compound
apolipoprotein a1: EC, endogenous compound
insulin: EC, endogenous compound
glucose transporter: EC, endogenous compound
lipoprotein lipase: EC, endogenous compound

RN

(sunflower oil) 8001-21-6; (fish oil) 8016-13-5; (glucose) 50-99-7, 84778-64-3; (cholesterol) 57-88-5; (insulin) 9004-10-8; (lipoprotein lipase) 83137-80-8, 9004-02-8