



Evaluation of the role of mixture of fish and corn oils in repression of induced Ulcerative colitis in rats

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By

Dina El said Abd El Halim El Shazly

B.Sc. in Biochemistry and Chemistry (2008)

Faculty of Science

Ain Shams University

Under Supervision of

Prof. Dr. Eman I. Kandil

Professor of Biochemistry

Faculty of science

Ain Shams university.

Prof. Dr. Nashwa K. Ibrahim

Professor of Biochemistry

National Center for Radiation

Research and Technology

Atomic Energy Authority.

Dr. Fatma S.M. Moawed

Lecturer of Biochemistry

National Center for Radiation

Research and Technology

Atomic Energy Authority.

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دينا السعيد عبد الحليم الشاذلي

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أستاذ مساعد الكيمياء الحيوية

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

الإهداء

الحمد لله حمدا كثيرا طيبا مبارك فيه سبحانه لا نحصي ثناء عليك انت كما اثنيت على نفسك فلا حصر لنعمك ولا حدود لفضلك.

"سبحانك لا علم لنا الا ما علمتنا"

الى الرحمة المهداة ومعلم البشرية رسول الانام الى من بلغ الرسالة وأدى الأمانة ونصح الامه (سيدنا محمد صلى الله عليه وسلم)

الى من رباني على حب العلم والتعلم، الى من حفزني وساعدني، الى من احمل اسمه بكل افتخار (والدي العزيز)

الى معنى الحب والعطاء والإخلاص، الى من ساندتني بالوقت والمجهود والدعوات، الى من اعطتني عمرها بحب وحنان، الى من كان دعائها ودعمها سر نجاحي وكلمات الاهداء لا تكفيها (امي الغالية)

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الى أخي واختي واصدقائي وكل من علمني حرفا

الى ابنائي نعمة ربي وسر سعادتي.

Declaration

I declare that this thesis has been composed by me and it has not been submitted for a degree at this or any other university.

Dina El Said El Shazly



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Abstract

Excessive use of n-6 polyunsaturated fatty acids (PUFA) and inadequate n-3 PUFA in diet have been associated with enhancing risk for developing ulcerative colitis (UC). In rat models in different studies, n-3 PUFAs have been shown to attenuate colitis. However, little information is available concerning the *in vivo* effects of these fatty acids on different inflammatory mediators. The aim of this study was to examine the effect of fish and corn oils mixture (FO/CO) on dextran sodium sulfate (DSS)-induced colitis in rats. Anti-inflammatory activity was assessed by colonic myeloperoxidase (MPO) and serum alkaline phosphatase (ALP) activities. Expression of inflammatory related mediators including, inducible nitric oxide synthase (iNOS), nuclear factor kappa B (NF- κ B) and signal transducer and activator of transcription (STAT-3) were also assessed. In addition, cytokines including, tumor necrosis factor alpha (TNF- α) and interleukin-10 (IL-10) were evaluated. Our results demonstrated that administration of FO/CO mixture by ratio (2.5:1) for four weeks resulted in reduced TNF- α , ALP, iNOS, and MPO activities accompanied with an increase of IL-10 level. In addition, FO/CO mixture proved anti-inflammatory properties by reducing the expression levels of transcription factors; NF- κ B and STAT-3. Histopathological findings reinforced the obtained biochemical data.

List of abbreviations

AA	Arachidonic acid
ALA	Alpha-linolenic acid
ALP	Alkaline phosphatase
ANOVA	Analyzed Using One way analysis of Variance
APC	Antigen presenting cells
CD	Crohn's disease
CO	Corn oil
CLA	Conjugated Linoleic acid
COX	Cyclooxygenase
CRC	colorectal cancer
DC	Dendritic cells
DHA	Docosahexanoic acid
DNA	Deoxyribonucleic acid
DSS	Dextran sodium sulfate
ELIZA	Enzyme-linked immunosorbent assay
EPA	Eicosapentanoic acid
FO	Fish oil
GLA	γ -linolenic acid
IBD	Inflammatory Bowel Diseases
IL-10	Interleukin-10
iNOS	inducible nitric oxide synthase
JAK	Janus activated kinase
LA	Linoleic acid

LTB4	Leukotriene B4
LSD	Least significant difference
MCFA	Medium chain fatty acid
MPO	Myeloperoxidase
NF-κB	Nuclear factor-kappa B
NO	Nitric oxide
ω-3	Omega 3
ω-6	Omega 6
PCR	Polymerase chain reaction
PGE2	Prostaglandin E2
PUFA	Polyunsaturated fatty acids
r.p.m	Rounds per minute
ROS	Reactive oxygen species
RT-PCR	Reverse transcriptase real time polymerase chain reaction
STAT	Signal transducer and activator of transcription
TNF-α	Tumor necrosis factor alpha
TXA2	Thromboxane A2
UC	Ulcerative colitis

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