Effects of Retinoic Acid on Liver Triglyceride Level and Diacylglycerol Acyltransferase-2 (DGAT2) Gene Expression in Rats with High-Cholesterol Diet-Induced Steatosis

By Rezayee, KJ (Rezayee, Khalid Jan) [1], [2] ; Harun, NM (Harun, Noraihan Mat) [1] ; Salam, SKNM (Salam, Sirajudeen Kuttulebbai Naina Mohamed) [1] ; Abdullah, NZ (Abdullah, Nor Zamzila) [3] ; Buyong, Z (Buyong, Zunariah) [1] ; Mohamed, NA (Mohamed, Nawal Ahmed) [1]

View Web of Science ResearcherID and ORCID (provided by Clarivate)

Source IIUM MEDICAL JOURNAL MALAYSIA

View Journal Impact

Volume: 25 Issue: 1 Page: 151-157

DOI: 10.31436/imjm.v25i01/3055

Published JAN 2026

Indexed 2026-01-12

Document Type Article

Abstract INTRODUCTION: Non-alcoholic fatty liver disease (NAFLD) incidence is rising globally without effective treatment available. Serum retinoic acid level was found to be low in NAFLD patients. Thus, this study investigated the effects of retinoic acid administration on liver triglyceride levels and Diacylglycerol acyltransferase 2 (DGAT2) gene expression in high-cholesterol diet-induced steatosis rats. MATERIALS AND METHODS: Forty male Sprague-Dawley rats were divided into five groups (n=8/group). Groups A and B received a normal diet, while groups C, D, and E were fed a high cholesterol diet (HCD) for four weeks to induce steatosis (Phase 1) and continued with the same diet for the next four weeks (Phase 2). In Phase 2, Group D received vehicle (Olive oil), while Groups B and E received retinoic acid (7.5mg/kg subcutaneously) twice weekly with their respective diet. Liver triglyceride levels were measured using the Bligh and Dyer's method, and hepatic DGAT2 gene expression was quantified using Real-Time qPCR. Data was analysed using the One-Way Analysis of Variance (ANOVA) test. RESULTS: Retinoic acid-treated groups showed a reduced pattern in liver triglyceride levels, in which Group E level is 3.6 +/- 0.88 mg/g compared with Group C 4.12 +/- 1.5 mg/g, but statistically insignificant ($p>0.05$). The DGAT2 expression was significantly reduced in Group E by 0.63-fold (63%) when compared to Group C. CONCLUSION: These findings suggest that retinoic acid administration might reduce the liver triglyceride level by down-regulating DGAT2 gene expression. However, further studies are required to confirm retinoic acid as a potential candidate for improving NAFLD.

Keywords **Author Keywords:** Nonalcoholic fatty liver disease; High; cholesterol diet; Retinoic acid; liver; Triglyceride; DGAT2 expression

Author Information

Corresponding Address: Harun, Noraihan Mat (corresponding author)

Int Islamic Univ Malaysia, Dept Basic Med Sci, Kulliyyah Med, Kuantan, Pahang, Malaysia

E-mail Addresses :
noraihan@iium.edu.my
Addresses :
[1] Int Islamic Univ Malaysia, Dept Basic Med Sci, Kulliyyah Med, Kuantan, Pahang, Malaysia
[2] Kabul Univ Med Sci, Dept Med Lab Technol, Kulliyyah Allied Hlth Sci, Kabul, Afghanistan
[3] Int Islamic Univ Malaysia, Dept Pathol & Lab Med, Kulliyyah Med, Kuantan, Pahang, Malaysia
E-mail Addresses :
noraihan@iium.edu.my

Categories/ Classification Research Areas: General & Internal Medicine

Web of Science Categories Medicine, General & Internal

Funding

View funding text

Funding agency	Grant number
International Islamic University Malaysia (IIUM) Research Management Centre under the Research Management Centre Grant 2020 (RMCG)	RMCG20-069-0069

+ See more data fields

Journal information

IIUM MEDICAL JOURNAL MALAYSIA

← View Journal Impact

ISSN 1823-4631

eISSN 2735-2285

0.06
Journal Citation Indicator ™ (2024)

Current Publisher	INT ISLAMIC UNIV MALAYSIA, KULLIYYAH MEDICINE, JALAN SULTAN AHMAD SHAH, KUANTAN PAHAN 25200, MALAYSIA
Research Areas	General & Internal Medicine
Web of Science Categories	Medicine, General & Internal

Citation Network

In Web of Science Core Collection

0 Citations

Create citation alert

37
Cited References

View Related Records

How does this document's citation performance compare to peers?

Open comparison metrics panel

Data is from InCites Benchmarking & Analytics

Use in Web of Science

0	0
Last 180 Days	Since 2013

Learn more →

This record is from:

Web of Science Core Collection

- Emerging Sources Citation Index (ESCI)

Suggest a correction
If you would like to improve the quality of the data in this record, please Suggest a correction