

REVIEWER'S REPORT

Manuscript No.: IJAR-50697

Date: 18-03-2025

Title: Characterization of gut and liver microbiome alterations in a streptozotocin induced rat model of liver damage

Recommendation:

Accept as it is.....**YES**.....
 Accept after minor revision.....
 Accept after major revision
 Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality	√			
Techn. Quality		√		
Clarity		√		
Significance			√	

Reviewer's Name: Dr Aamina

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)

Reviewer's Comment / Report

Abstract

The abstract provides a concise summary of the study's aims, methodology, and key findings. The focus on microbiome alterations in both the gut and liver in an STZ-induced liver damage model is well-articulated. The description of experimental conditions, including STZ dosage and treatment duration, is clear. The results effectively highlight the significant increase in microbial colonies in the liver compared to the gut, supporting the study's objective of establishing a link between microbiota and liver damage. The mention of specific bacterial morphological changes adds depth to the findings.

Introduction

The introduction comprehensively describes STZ, its molecular properties, and its mechanism of action, particularly its impact on glucose transport and cellular toxicity. The discussion on oxidative stress and DNA damage caused by STZ is well-supported by relevant literature. The role of the hepatic portal vein in bacterial translocation and liver exposure to gut microbiota is clearly explained, establishing the gut-liver axis as a central theme of the study. The inclusion of microbial contributions to bile acid metabolism and non-alcoholic fatty liver disease further strengthens the context. The discussion on the gastric mucosal barrier and its role in microbial interaction adds valuable insights into how STZ disrupts gut-

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liver homeostasis. The references to previous studies and mechanisms of microbial translocation effectively position the study within the existing body of research.

Overall Assessment

The manuscript presents a well-structured and scientifically relevant investigation into microbiome alterations in STZ-induced liver damage. The content is logically organized, with a clear connection between the introduction, methodology, and findings. The study provides valuable insights into the role of microbiota in liver pathology, contributing to the growing research on the gut-liver axis. The experimental approach and observations are well-articulated, making the research significant for understanding microbial contributions to liver disease.