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Early *Lactobacillus plantatrum* administration ameliorate the histological changes induced by thioacetamide in rat's liver through inhibition of CXCL9/TLR4 pathway

Asmaa M Elshaer[1], Omnyah A El-Kharashi[1], Ghada Galal Hamam[1], Enas S Nabih[1], Yosra M Magdy[1] and Abeer A Abd El Samad[1]
[1]Ain Shams University, Egypt

Background: The gut-liver axis is gaining attention as a key mechanism responsible for the development, progression and fate of cirrhosis. From the previous findings, we supposed that CXCL9/TLR4 may be one of the possible inflammatory pathways which are involved in this pathological process.

Objectives: In the present study we aimed to examine the early and late administration of *Lactobacillus plantatrum* (*L. plantatrum*) on the effect of early and late hepatic changes induced by Thioacetamide (TAA). The role of CXCL9/TLR4 pathway in the developing and the progression of cirrhosis were also investigated.

Material & Methods: Forty eight (48) male Wister rats were used and divided equally into two main groups. Group-1, subdivided into naïve, *L. plantatrum*, TAA and TAA+*L. plantatrum* (introduced after 2 weeks of TAA for 4 weeks). Group-2 was subdivided into naïve, *L. plantatrum*, TAA and TAA+*L. plantatrum* (introduced after 8 weeks of TAA for 4 weeks). Liver function, serum α fetoprotein, CXCL9 and TLR4 were measured. Histological and immunohistochemistry studies were also performed.

Results: TAA induced histological changes with deterioration of liver function starting from 6th week of administration. TAA induced significant increase in liver enzymes and serum α fetoprotein. The histological examination revealed cirrhotic nodules, proliferation of bile duct, portal vein congestion. Moreover, hepatocyte nuclei were usually large with prominent nucleoli and high nuclear cytoplasmic ratio. A significant increase in collagen fibers and PCNA positive nuclei were also noticed. The PCR showed significant increase in CXCL9 and TLR4 expression starting after the 6th week and continued till the animal scarification in Group-2 after 12 weeks. While *L. plantatrum* significantly ameliorated these pathological changes when administrated after 2 weeks of TAA, it failed to recover the biochemical and histological changes when administrated after 8 weeks of TAA.

Conclusion: Administration of TAA induced disturbance of gut microbiota which activated CXCL9 /TLR4 pathway yielding in biochemical and histological changes in the liver. These pathological changes were ameliorated with the early administration of *L. plantatrum*

Biography

Asmaa M Elshaer has completed her MD Pharmacology from Ain Shams University. She is currently working as an Associate professor in clinical pharmacology department, faculty of medicine, at Ain Shams University. She has published several international publications.

drasmaamonir@yahoo.com

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