

## The International Debate on the Preventive Effects of Akkermansia Muciniphyla and its Extracellular Vesicles (Evs) on Liver Injury in CCL4 Treated Mice

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Non-alcoholic fatty liver disease is described as a liver pathologic spectrum that could progress to steatosis, and fibrosis. The hepatic stellate cells (HSC) which activate in response to liver inflammation have a key role in liver fibrogenesis. In recent decades, it has been shown that gut microbiome plays a crucial role in the host health maintenance, regarding the liver anatomy; the close interaction exists between the liver and gut microbiome.

The aims of this study is to characterize the immune-modulatory and preventive effect of Akkermansia muciniphyla and its extracellular vesicles (EVs) to liver fibrosis by measuring cytokine production and gene expression in cell line and animal model.

LX2 cell line was used for in vitro and 10 weeks old Male C57BL/6N mice for in vivo study. For chronic liver injury induction, HFD was used along with CCl<sub>4</sub>, whilst mice gavaged with A.muciniphyla and its EVs. Blood samples were collected for biochemical and cytokine assay using ELISA test. Tissues were collected for histopathological examination and gene expression was examined by Real-time quantitative

PCR.

We found that A.muciniphyla and its EVs were effective in liver injury prevention by reducing the inflammatory and inducing anti-inflammatory genes expression (TLRs, IL6, IL10, TNF- $\alpha$ , PPAR- $\alpha$ , PPAR- $\gamma$ ).

This study shows the effects of A.muciniphyla its EVs against liver injury intensity in CCl<sub>4</sub> treated mice. These results suggest that A.muciniphyla its EVs could play a pivotal role in the modulation of inflammatory processes and can be considered as a probiotic or prebiotic candidate for liver disease prevention.

### Biography:

Shahrbano Keshavarz Azizi Raftar has completed his MSc in medical microbiology from Kashan University of Medical science and she is PhD candidate in Medical Bacteriology at Pasteur Institute of Iran (PI). She is quality assurance manager of microbiota database of Iran microbiota research center, She has published 2 papers in reputed journals and has been working on several microbiota related research project . (Up to 100 words)