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### Microflora and TLRs in HCV-related cirrhosis and hepatocellular carcinoma

Chronic *Hepatitis C virus* (HCV) infection can lead to hepatocellular carcinoma (HCC). We recently reported presence of bacteria in normal and cirrhotic liver tissues and investigated Toll like receptors (TLR) activation of HCV-related cirrhosis and HCC. Aberrant expression or activation of TLRs results in chronic inflammation that can promote carcinogenesis. We hypothesize that changes in liver microbiome can result in altered TLR expression that influences HCV-related cirrhosis and carcinogenesis. Therefore in this study, we investigated bacterial flora and expression of TLR2 and TLR4 in normal liver tissues, HCV-related cirrhotic tissues and HCV-related HCC tissues. Tissue sections were stained for TLR2 and TLR4 expression by immunohistochemistry and the staining intensity was quantified. Gram-positive and Gram-negative organisms were present in all the liver tissues. There were no changes in the expression of TLR2 among the different study groups. TLR4 expression in cirrhotic and HCV-cirrhotic and HCV/HCC hepatocytes compared to normal liver hepatocytes. Lower TLR4 expression in cirrhotic and HCC tissues could be due to altered microbial flora and reflect increased innate immune suppression during cirrhosis and cancer development. These findings suggest that microbial ecology might contribute towards immunosuppression of TLR4-mediated innate immunity in cirrhotic livers undergoing progression to HCC. Manipulating bacterial ecology or TLR4 agonist treatment could prevent HCV-related liver cancer development.

#### **Biography**

Anil Kaul MD, DDS, MPH graduated from Madras Medical College in Medicine, King Georges' Medical College in Dentistry, and in Public Health from University of Minnesota. He currently serves as Director of High-Complexity Clinical Laboratories and a Faculty at Oklahoma State University-Center for Health Sciences. He has been awarded 6 Patents and has published more than 50 scientific papers. He has served as senior health advisor to the US Department of State and received "Expeditionary Service Award". In 2014, he also received "Lifetime Achievement Award" at Global Health Summit, and in 2008 he was named as Sony's "Scientist of the Year Award".

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