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# Title: Identification of ns5b resistance against sofosbuvir in hepatitis c virus genotype 3a, naive and treated patients

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Pakistan has the second highest prevalence of HCV with genotype 3a (GT-3a) being the most frequently circulating genotype. Currently resistance associated substitutions (RASs) are a major challenge in HCV treatment with direct acting antivirals (DAAs). Sofosbuvir (SOF) is an FDA-approved NS5B nucleotide inhibitor. The aim of this study was to identify these RASs in the NS5B gene in naive and treated Pakistani HCV 3a isolates against SOF.

METHODS AND RESULTS

Blood samples were collected from anti-HCV positive patients, followed by HCV RNA isolation and real time PCR quantification. HCV positive patients were processed for HCV RNA genotyping, Patients with genotype 3a were processed for NS5B gene amplification and sequencing. GT-3a was the most prevalent genotype (62.2%). S282T was identified in 2 (8.7%) patients, C316Y/G/R in 3 (13%), V321A, and L320P in 1 (4.3%) each in SOF/RBV resistant patients. Variants of S282 were detected in 3 (13%) of SOF/RBV treated patients. While INF/RBV associated mutations were also analyzed, D244N, A333R, and A334E were identified in 2 (9.5%), 3 (14.2%), and 7 (33.3%) in treatment-naive and 15 (65.2%), 7 (30.4%), and 5 (21.7%) treated patients respectively. Q309R was observed only in one treatment experienced patients. Some substitutions were present at higher frequency in both groups like N307G, K304R, A272D and R345H, considered that they do not have any role in Sofosbuvir resistance.

**CONCLUSION:** It was concluded that Sofosbuvir RASs are present in Pakistani HCV GT-3a isolates, and they should be monitored carefully, especially in treatment-experienced patients, for further selection of treatment regimens.

**SIGNIFICANCE AND IMPACT OF STUDY:** HCV RASs have been studied very well all across the world but there is scarcity of data regarding this topic in Pakistani population, this study provides data regarding prevalence of these RASs in Pakistani HCV isolates emphasizing the fact that these RASs must be carefully monitored before starting HCV treatment especially in treatment failure patients

## Biography

Dr. Aleena Sumrin being Associate Professor at CAMB, has 37 research publications in a peer reviewed journals, direct submissions of 20+14+5 novel HCVgene regions to the NCBI/GENBANK data base in 2022,2011 & 2010, 06 abstracts in poster/oral presentations in international conferences, Research Projects International scientific collaborations, 07 PhDs, 35 Mphils, 60 internships, produced Awards..