

# Hepatitis C Virus Genotype in Blood Donors and Associated Liver Disease in Indonesia

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## Key Words

Hepatitis C virus · Genotype · Chronic hepatitis C · Liver cirrhosis · Hepatocellular carcinoma · Indonesia

## Abstract

**Objective:** The aim of this study was to investigate the distribution of hepatitis C virus (HCV) genotype and the possible association between genotype and HCV-associated liver disease in Indonesia. **Methods:** 32 anti-HCV-positive asymptomatic carriers (AC), 55 chronic hepatitis (CH), 41 liver cirrhosis (LC), and 35 hepatocellular carcinoma (HCC) patients were included in this study. HCV genotyping was performed by phylogenetic analysis of the NS5B and 5'-UTR regions. **Results:** The HCV subtype 1b (36.5%), based on NS5B region, was the most prevalent, followed by subtypes 3k (15.4%), 2a (14.4%), 1a (12.5%) and 1c (12.5%), and 2e (4.8%). Subtypes 2f, 3a, 3b, and 4a were also found in some of the samples. HCV subtypes 3k (40.0%) and 1a (35.0%) were the two major subtypes in AC. HCV subtype 1b was not found in AC, but it was common in CH (31.3%), LC (50.0%), and HCC (57.1%). **Conclusion:** HCV subtype 1b was prevalent in samples of HCV-associated

liver disease patients, including CH, LC and HCC. The percentage of subtype 1b was increased with the disease severity (AC < CH < LC < HCC).

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## Introduction

Hepatitis C virus (HCV) infection is known to be a major contribution to chronic liver disease such as chronic hepatitis (CH) and liver cirrhosis (LC), often leading to hepatocellular carcinoma (HCC). Worldwide, more than 170 million people are infected with HCV [1]. HCV is an enveloped virus with a single-stranded, positive-sense, non-segmented RNA genome of approximately 9,500 nucleotides, encoding a polyprotein precursor consisting of about 3,000 amino acids [2]. The polyprotein is cleaved by the host signal peptidase and two intrinsic viral encoded proteases to generate at least 10 viral proteins, including the core protein (C), the envelope 1 glycoprotein (E1) and two types of envelope 2 glycoprotein (E2), and 6 nonstructural proteins (NS2, NS3, NS4A, NS4B, NS5A, and NS5B) [3, 4].