

**Summary:**

Fowl adenoviruses (FAdVs) are widely distributed globally and have, in recent years, led to significant economic losses in the poultry industry. Based on loop L1 of the Hexon gene, five species of FAdVs are classified into twelve serotypes (1–7, 8a, 8b, 9–11), with serotypes 2, 7, 8a, 8b, and 11 identified as the most common causative agents of Inclusion body hepatitis. This study aimed to assess the molecular detection of virus presence, focusing on the Hexon and penton genes as target genes. Notably, there has been a recent increase in mortality due to hepatitis lesions among eight to fourteen-day-old broiler chickens in the West Azerbaijan province of Iran. In 2019 and 2020, liver samples suspected of inclusion body hepatitis were collected from ten broiler farms. Additionally, liver samples and cloacal swabs were obtained from two broiler breeder farms, whose chickens were bred on the aforementioned ten broiler farms. DNA extraction was performed on the collected samples, and certain sections of the liver from the same samples underwent laboratory examination for histopathological analysis. In this study, two gene regions were chosen to validate the presence of the virus through PCR. Following the PCR test, 60% of collected liver samples from broiler farms suspected of infection, exhibited positive results. Phylogenetic analysis based on both gene regions indicated that the isolated viruses are classified as serotype 11 (species D) of FAdVs. Histopathological examination of positive liver samples revealed hyperemia and necrosis, along with the presence of inclusion basophilic bodies in liver cells. The identified FAdVs demonstrated a high similarity to serotype 11 viruses previously documented in Iran, as well as viruses identified in Pakistan, Saudi Arabia, India, China, and Canada in recent years. However, in the histopathological and PCR examination of liver and cloacal swab samples from two broiler breeder farms, both gene regions yielded negative results.

This study aimed to compare the penton and hexon genes of avian adenoviruses for the molecular detection of inclusion body hepatitis in both broiler and broiler breeder farms. In addition to offering an updated insight into the prevalent avian adenoviruses in Iran, this research introduces the penton gene as a potential alternative target for diagnosing IBH. Preventing IBH is crucial due to its potential for both horizontal and vertical spread in Iran. This study marks the first exploration of the Penton gene in Iran. Furthermore, it highlights the challenge of detecting the virus in broiler breeder farms.

**Keywords:** Fowl Adenovirus, Inclusion body hepatitis, broiler, broiler breeder