

## Prevalence of Bovine Viral Diarrhoea Virus infection in Industrial Holstein Dairy Cattle in Suburb of Mashhad-Iran

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### Introduction

Bovine Viral Diarrhoea Virus (BVDV) is a worldwide distributed infectious disease of cattle. This Pestivirus of the *Flaviviridae* can cause economical losses. Reproductive, respiratory and enteric disorders could be associated with BVDV (6, 13). BVDV is classified into two biotypes based on tissue culture cells as NCP (noncytopathic) and CP (cytopathic) (5). The NCP BVDV infection is the most common isolated in the field. However, CP biotypes have been shown to be the cause of mucosal disease (MD) (3). Of major epidemiological importance are persistently infected (PI) animals which result from an intrauterine infection. PI calves may show clinical signs of infection, including poor weight gain or increases susceptibility to infection with other pathogens, although they may also remain healthy. PI animals are the main reservoir of BVDV within herds and play the most important role in spreading of the disease (2). However, such animals are at risk of developing MD a fatal form of BVDV infection characterized by lesion in the gastrointestinal tract (4, 9). Infection with BVDV has been reported to cause substantial economical losses worldwide (8, 11).

The objectives of this study were: 1) to estimate the prevalence of antigen positive PI animals in some dairy cattle herds. 2) to investigate the significance of the infection of BVDV between the culled animals and the other cows.

### Materials and Methods

The study was carried out in suburb of Mashhad in Khorassan Razavi province-Iran. It is a major producer of livestock in Iran. Totally, 157 Holstein cow blood samples were taken from 18 industrial dairy cattle herds in February to May 2006 in suburb of Mashhad -Iran. Forty-one (26.11%) samples were prepared accidentally from culled animals. The body condition scoring of culled animals was poor. The culled cows were referred to slaughterhouse. All animals were bled and heparinised whole blood samples were examined for the presence of BVDV antigen using Pestivirus-Ag capture ELISA kit (Svanova Biothec AB, Uppsala, Sweden) as prescribed by the manufacturer. The sensitivity (Se) and specificity (Sp) of the test as instruction of manufacturer are 98% and 97%, respectively. Differences in proportion of PI animals between the

culled and the other ones were analyzed for statistical significance ( $p \leq 0.01$ ) using the Chi-square test in SPSS software version 9.

### Results and Discussion

Of 157 cows within the 18 dairy cattle herds in suburb of Mashhad-Iran, the number of calves, heifers and dairy cows which were included : 57 (36.3%), 36 (22.92%) and 64 (40.76%), respectively. The prevalence of BVD antigen positive animals was 5 (3.18%) among the herds (Table 1). The differences between PI removed and non-removed cows were significantly higher ( $p < 0.01$ ).

This study showed that only 3(16.66 %) out of 18 herds had PI animal. However, other field study showed somewhat different results concerning the infection. In our data, the prevalence of PI animal within the herds was significantly lower than what was observed in removed cows in relation to the prevalence of the antigen-positive animals. This result show that the PI animals remove from the infected herds in suburb of Mashed-Iran. Since the removed animals samples were obtained from the animals with poor body condition scoring, therefore, it may be an indicator to be suspected clinically to PI animals. In two studies, the virus circulated for 2-3 years although there were no PI animals present and no direct contact with PI cows was found (1, 10). Therefore, the prevalence of PI animals in our study may be higher than the obtained results in dairy herds in suburb of Mashhad. However, it was detected that 11% of bulk milk tanks of industrial dairy cattle herds in suburb of Mashhad are infected by BVD virus (14).

There are abundant of studies showing somewhat similar prevalence of approximately 0.5% and 2% PI positive animals (7). The estimated prevalence of PI animals among a subsample of 5129 feedlot calves in Canada was less than 0.1% (15). In this study the prevalence of PI animals in the herds was lower than what could be expected in relation to the prevalence of the antigen-positive animals (12). These observations may be attributed to the low bio-security standards followed by herdsman, which allow introduction or re-introduction of infection in a herd. It is concluded that the prevalence of PI animal(s) within the herds were not high in dairy cattle herds around Mashhad-Iran. However, the PI