Introduction
Infectious bronchitis (IB) virus, first described in the 1930s (Schalk and Hawn, 1931), continues to be a major cause of disease in chickens of all ages and types in all parts of the world (Cook and Huggins, 1996). Good quality vaccines have been available to control IB infections since the 1960s. However, despite their careful use, IB continues to be a major problem. One reason for this is the large number of antigenic types of IB that have been found worldwide. The first IB serotype to be described was Massachusetts (Schalk and Hawn, 1931). This was followed in the mid-1950s by the Connecticut serotype (Gunter et al., 1956). Since that time, new IB serotypes have been reported from the United States (Gelb et al., 1991), Europe (Bosch et al., 1994), and many other parts of the world (Gellin et al., 1991). Middle East and North Africa countries are also suffering from this problem. With the help of molecular studies, it is now known that it is the 91 part of the IB virus that is responsible for the determination of its serotype. Furthermore, a new IB virus serotype(s) can arise as a result of only a very few changes in the serine acid.

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In the last few years it was noticed that breeder and layer flocks in the Middle East and North Africa areas were experiencing problems caused by IB. The Middle East and North Africa region have an estimated poultry population of ~ 4 billion broilers, 160 million commercial layers and 40 million breeders. Most of this population is located in the four countries of the Middle East; Saudi Arabia, United Arab Emirates, Jordan and Egypt.

Although several vaccines were available in the market for controlling IB infection, new variant strains have appeared and cannot be controlled by them. Thus, it has been believed valuable to find out what type of IB variant strains are playing a role in the Middle East and North Africa area.

Materials and Methods
300/35 serum samples, the samples were collected from infected flocks from Middle East and North Africa regions and analyzed using HI and PCR techniques. Serum samples were analyzed for recovery of IB viral variants using HI test.

Materials and Methods
A) Breeders

While PCR results showed the presence of more than one IB variant the HI results showed that different IB variant strains were playing a role in the Middle East and North Africa area.

In broiler, HI result considered as positive when it is above 4, while in breeders and layers considered as positive when it is above 6.

For PCR analysis, 324 FTA card samples were analyzed for sequencing.

The following parameters were used as parameters:

- Positive results for breeders and layers HI >6 and HI >4 for broilers
- Q1 and QX like found 1%
- MA41 found in Breeder 21%
- Sul/01/09 in broiler 8%
- Iranian found in Breeder 2% and in Broiler 5%
- 274 found in Breeder 3% and in Broiler 1%
- 4/91 found in Breeder 6% and 15% in Broiler.

For broilers, the body weight and mortality, while for breeders and layers production and egg quality were monitored. A body weight of 2 kg of live weight was used as reference in breeders as shown in graph 5 and graph 6. While in breeders it was noticed there is a drop in egg production during IBV infection, starting from 32 weeks, compared to standard curve as shown in graph 5A. After implementation the vaccine (Vaccine+Mass) the drop disappeared and production curve returned back to the standard level as seen in graph 5B. Similarly, graph 6 shows the clinical signs in breeders and broilers.

Graph 3: Body weight before and after implementation of IB vaccine (Variant +Mass)

Graph 5: Egg production

Conclusion
Presence of only one type of IB variant at the farm is rare.

Majority of cases we could find IB combined with other diseases like AI H9 or ND. We advised customers to use two type of IB vaccines (Variant + Mass) to have better protection against other IB of having no vaccines in the market.

Also, we wanted to know which other diseases are existed along with IB in order to be controlled as well.

References
- The Veterinary Quarterly, vol 13, pp. 114-120.
- Avian Diseases, vol 35, pp. 82-87.
- Veterinary Quarterly, Asia, vol 6, pp. 203-205.