General Discussion on Avian Viral Diseases

Chairman: Nomura Y. (Japan): I would like to divide the discussion into three parts including Marek's disease (MD), Newcastle disease (ND) and miscellaneous avian viral diseases such as avian nephritis virus infection.

Watanabe M. (Japan) Comment: Recent studies at the University of Georgia indicate that the intra-nasal or spray administration of lentogenic strains such as Hitchner B1 or La Sota strain of Newcastle disease virus (NDV) is the best means to prevent the natural infection with velogenic viscerotropic Newcastle disease virus (VVNDV), followed by ocular administration. These methods afford a better protection than when the intra-muscular or sub-cutaneous route is used. The high level of circulating neutralizing antibodies, namely IgG cannot prevent natural infection with NDV but it can prevent death of chickens from ND. Our data indicate that 2-3 days after intra-nasal vaccination with B1 live vaccine, the birds vaccinated showed a complete resistance against the intra-nasal challenge with VVND virus, Narashino strain. We tried to investigate the mechanism of the prevention prior to the appearance of circulating neutralizing antibodies and it was found that cell-mediated immunity including interferon activity plays an important role in the prevention. Thereafter, there is a shift from cellular immunity to humoral immunity in the mechanism of prevention. The same phenomenon can also be recognized in the infection with influenza virus (Nozima et al; The Virus Institute; Kyoto University) as well as in the infection with *Leucocytozoon caulleryi* (Mori; Kyorin Medical College; Tokyo).

Chairman: I would like to ask the participants how they differentiate between field and vaccine strains of Newcastle disease virus.

Rahman, A. (Malaysia): In Malaysia, we use the mesogenic strain for vaccination routinely. Differentiation of vaccine strain from field strain is carried out by inoculation of the virus isolate to susceptible 6-week-old chickens. Field strains cause 100% mortality unlike the mesogenic strains. There are cases of isolation of mixed strains (mesogenic and field) especially in case of vaccination with mesogenic strains in the face of an outbreak.

Watanabe. M. (Japan) Comment: Field strains kill one-month-old chickens unlike the mesogenic strains. The route of administration is most important and spraying, intra-nasal or ocular routes should be adopted.

Gupta, B.K. (India): Differentiation of vaccine strains from virulent outbreak strains can be made by studying their Intra-Cerebral Pathogenic Index (ICPV) as well as the Mean Death Time (MDT) which are lower in the case of the vaccine strains.

Snowdon, W. (Australia): Acute virulent Newcastle disease virus was introduced into Australia at Melbourne Victoria in 1930. It was finally eradicated in 1932 by adopting quarantine and slaughter procedures on affected properties. In the 1960s, Newcastle disease virus infection was found in Australian poultry but was not associated with disease. In recent times, some lentogenic strains of Australian Newcastle disease virus have been tested as vaccine strains and the results show that under certain conditions these can produce satisfactory immunity against virulent Newcastle disease virus infection.

Rahman, A. (Malaysia): What are the routes of vaccination applied in Japan?

Chairman: For B1 live vaccine it is recommended to use the intra-nasal or ocular route in young chickens and spraying for chicks of more than two weeks of age. The drinking water administration is less effective than the other routes but it can be applied for massive vaccination in a large flock, especially in the case of younger chickens.

Horiuchi, T. (Japan): What method of vaccination would you recommend for massive vaccination with live vaccines in chickens raised in open house.

Chairman: Spraying could be recommended for chickens older than two weeks but for the younger ones, drinking water administration is justified although it is not as effective as the other routes (particle doses have to be 100 times higher).

Yamada, Y. (Japan) Comment: I would like to comment on the importance of genetic eradication of Marek's disease through the development of lines with high resistance to Marek's

disease, particularly in government-operated institutes.

Chairman: Do you have any evidence of vertical transmission of reticuloendotheliosis virus (REV) in those field chickens vaccinated with REV contaminated herpes virus of turkey vaccine? (HVT)

Yoshida, I. (Japan): No we don't. The accident we observed occurred by using embryonated eggs collected from field birds.

Joseph, P.G. (Malaysia) Comment: I would like to comment on Dr. Yamada's remark. Genetic resistance to MD in certain breeds of chickens has been recognized in Malaysia. Since the parent stocks are imported, we have very little control over this aspect of eradication of the disease. Presently, vaccination is the only means of control in Malaysia.

Koh, J.G.W. (Singapore): You mentioned that cell-associated HVT vaccine is superior to cell-free HVT vaccine in immunizing chicks derived from HVT vaccinated parent flocks. As it is known that lyophilisation of cell-associated vaccine is difficult and probably not economical cell-associated vaccines have been presented commercially as frozen vaccines. As the latter pose problem in handling and in transportation, what progress or research has been realised in improving methods of freeze-drying cell-associated HVT vaccine?

Yoshida, I. (Japan): Since cell-associated HVT is not readily inhibited by HVT maternal immunity, it is natural that cell-associated HVT should be superior to cell-free HVT. So far we have not yet developed effective methods for transportation and handling of the vaccine.

Watanabe, M. (Japan) Comment: Comparative data collected from various countries, government and private laboratories demonstrate that regardless of the presence of maternal antibodies, cell-associated vaccines give better protection (400 times) compared to lyophilised vaccine.