VACCINE-RELATED MUMPS MENINGITIS - CANADA

The measles, mumps and rubella vaccine (TRIVIRIX® prepared by SmithKline-RIT s.a., Belgium and Institut Armand Frappier, Canada) was licensed in Canada in 1986. Shortly after, 3 cases of aseptic meningitis (1 case from Vancouver and 2 from Montreal) were reported within 4 weeks following the administration of this vaccine. Mumps virus was isolated from the CSF of these cases but there was no reliable in vitro marker test available to establish the vaccine origin of these isolates. Based on the assumption that approximately 250,000 to 300,000 doses of TRIVIRIX® vaccine may have been given by this time, the rate of CSN reaction found (1 case per 100,000 doses) was consistent with the reported by the manufacturer worldwide (1 in 70,000 to 1 in 200,000).

When 5 additional such cases of aseptic meningitis were reported (confirmed with mumps virus isolation from the CSF), careful analysis of the epidemiologic data on viral meningitis in Canada demonstrated that it was unlikely that these 8 cases had occurred by chance alone (p=0.00014). Consequently, the manufacturer of TRIVIRIX® voluntarily discontinued the distribution of the vaccine in Canada until laboratory data were available to demonstrate that the mumps viruses isolated from these vaccine recipients were not related to the Urabe mumps vaccine strain.

Recent laboratory findings from the United Kingdom(9) Canada (Brown EG, et al, unpublished data) and Japan(10) have provided sound evidence that the mumps virus strains isolated from the CSF were indeed related to the Urabe vaccine strain (the Japanese MMR vaccine(11) uses the Urabe vaccine strain). British investigators sequenced part of the gene that codes for the fusion protein of the mumps virus(12) and our laboratory in collaboration with the Department of Microbiology, University of Ottawa, also sequenced a portion of the hemagglutinin/neuraminidase gene of various mumps virus strains (Brown EG, et al, unpublished data). Results from both laboratories showed that the mumps viruses isolated from Canadian vaccine recipients were identical with the Urabe vaccine virus and different from 'wild' mumps virus strains isolated in Canada in 1967 and 1982.

It is known that the incidence of meningitis following natural mumps infection is high; symptomatic disease has been estimated to occur in about 10% of all cases. The infection follows the course of benign aseptic meningitis and usually has no sequelae. In the United States, the reported rate of CNS reactions following vaccination with the Jeryl-Lynn strain (Merck, Sharp, and Dohme) has been less than 1 case per million. This is in sharp contrast to the high incidence rate of mumps vaccine-associated meningitis (1 case per 1000 recipients) reported by Yugoslav investigators using the Leningrad-3 strain(8).

Since the laboratory findings confirmed conclusively that the meningitis observed in recipients of TRIVIRIX® vaccine (1 case per 62,000 doses distributed) was caused by the Urabe mumps vaccine,
VETERINARY PUBLIC HEALTH

New Approaches in Prevention of Pathogen Colonization in the Intestinal Tract of Food Animals

The key to controlling microbial contamination of raw poultry or meat including Salmonella and Campylobacter organisms is the prevention of high level contamination in the gut of live animals.

At present, at least 3 interventions appear to have some practical merit and are likely to be cost-effective in reducing microbial contamination of food of animal origin. They are: 1) competitive exclusion (Nutm), 2) addition of organic compounds to processed animal feed to prevent growth of pathogens in the feed during storage; 3) adding various carbohydrates (sugars) to animal diets in either their water or feed.

1) The Nutrim concept establishes an adult gut flora in newly-hatched chicks or pouls. Treatment of newly-hatched birds with an aerobic culture of intestinal material from adult Salmonella-free birds makes them resistant to infectious doses of Salmonella. This work has been repeated throughout the world. The most extensive experience as to the effect of the method on Salmonella is to be found in Finland and Sweden. It was established that the competitive exclusion method has effectively decreased the number of infected flocks.

2) Various combinations of organic acids have proven to be effective when added to manufactured foods in the prevention of contamination or recontamination by certain pathogens, especially Salmonella. Some of the organic acids also seem to have the added ability to prevent colonization of Salmonella in the intestinal tract of animals. Without adversely affecting the live animals, these acids can alter the intestinal microbial flora and significantly reduce contamination of the processed carcasses. The organic acid products are readily available, inexpensive and do not create manufacturing problems. They do not require additional handling of the food during storage, transport or feeding; they are natural compounds and are

SANTÉ PUBLIQUE VÉTÉRINAIRE

Méthodes nouvelles de prévention de la colonisation d’organismes pathogènes dans le tractus intestinal des animaux destinés à la consommation

Empêcher une forte contamination microbienne dans l’intestin des animaux vivants est l’aspect essentiel de la lutte contre la contamination de la volaille ou de la viande crus, notamment par les salmonelles et les Campylobacter.

À l’heure actuelle, il semble qu’au moins 3 interventions présentent un intérêt pratique et un bon rapport coût/efficacité pour la réduction de la contamination microbienne des aliments d’origine animale. Il s’agit des interventions suivantes: 1) exclusion compétitive (méthode de Nutrim); 2) adjonction de divers acides organiques aux aliments traités pour animaux de façon à empêcher la croissance des organismes pathogènes dans les aliments pendant le stockage; 3) adjonction de divers hydrates de carbone (sucres) au régime alimentaire des animaux, soit dans l’eau, soit dans les aliments.

1) La méthode de Nutrim établit une flore intestinale adulte chez de jeunes poussins, dindeaux ou autres qui viennent d’éclore. Le traitement d’oiseaux qui viennent d’éclore avec une culture aérobie de matériel intestinal provenant d’oiseaux adultes exempts de salmonelles les rend résistantes à des doses infécondes de salmonelles. Ces travaux ont été reproduits dans le monde entier. C’est en Finlande et en Suède que l’on a acquis le plus d’expérience concernant l’effet de cette méthode sur les salmonelles. On a constaté que la méthode d’exclusion compétitive avait effectivement diminué le nombre d’animaux infectés.

2) Diverses associations d’acides organiques se sont avérées efficaces lorsqu’elles sont ajoutées à des aliments industriels pour animaux: elles permettent en effet d’éviter la contamination ou la recontamination par certains organismes pathogènes, en particulier les salmonelles. Par ailleurs, il semble que certains acides organiques soient aussi en mesure d’empêcher la colonisation des salmonelles dans le tractus intestinal des animaux. Sans avoir d’effet négatif sur les animaux vivants, ces acides peuvent modifier la flore microbienne intestinale et réduire considérablement la contamination des carcasses traitées. Ces acides organiques s’obtiennent facilement, ils ne coûtent pas cher et ne posent pas de problèmes de fabrication. Ils n’exigent pas de manipulation spéciale des aliments pour animaux durant le stockage,