Evaluation of efficacy and safety of Aujeszky’s disease vaccines

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Abstract

Since Aujeszky’s disease have become an economic problem in pig farms in late 1960’s and early 1970’s many different vaccines, either inactivated or live – attenuated were developed. Soon it became evident that they differ in their efficacy. In this article a panel of tests used for evaluation of safety and efficacy of inactivated as well as live Aujeszky’s disease vaccines is described.

Key words: Aujeszky’s disease, pig, vaccines, safety, efficacy

Aujeszky’s disease (AD), caused by swine herpes-virus 1 (SHV 1), is still responsible for considerable economic losses in pig farms throughout the world. At the end of XIX century and in the beginning of XX century appearance of AD was very rare and clinical cases were observed mostly among cattle (Kluge et al. 1999). In late 60’s and early 70’s, when intensification in pig production occurred, AD became a problem. Development of big pig farms with many naïve animals, intensive migration of pigs and densely populated areas with many pig holdings led to clinically evident outbreaks of the disease. On the other hand intensive and multiple contacts between infected and susceptible pigs created excellent possibilities for serial passages of Aujeszky’s disease virus (ADV) resulting in arising probably more virulent strains of ADV. Altogether, intensive production and highly virulent ADV strains led to high morbidity and mortality among pigs not only in fattening farms but also in breeding and farrow-to-finish farms (Szweda 1992).

As a reaction for such a situation different vaccines were developed, either inactivated or attenuated. Those vaccines were based on ADV strains that differ in their properties. Soon it became evident that the commercially available vaccines were different as regards their efficacy (Wittmann 1979, 1982, 1986, Van Oirschot et al. 1990). In search for efficacy evaluation method, several animal models have been tested (Stellmann et al. 1989), but pigs were the best one. The next very important thing was to make choice of efficacy and potency evaluation criteria. Different studies revealed that vaccine evaluation based on clinical (morbidity and/or mortality) or immunological (humoral and/or cellular immunity) criteria did not correspond well enough with protection (efficacy) value of the vaccine in question (De Leeuw and van Oirschot 1985, Martin and Wardley 1986, van Oirschot 1987, Stellmann et al. 1989.). Taking this into account several other parameters, including pyrexia, viral excretion and body weight gain were used to assess the efficacy of ADV vaccines (De Leeuw and van Oirschot 1985, Martin and Wardley 1986, Marchioli et al 1987, Molitor and Hill 1988, Visser and Lutticken 1988, Kit 1989, Pejsak et al. 1990, Szweda 1992, Lipowski 1995, Mikulska-Skupień et al 2005). Out of them, body weight gains have become an acceptable quantitative indicator of the protection which ADV vaccines offer (De Leeuw and van Oirschot 1985,