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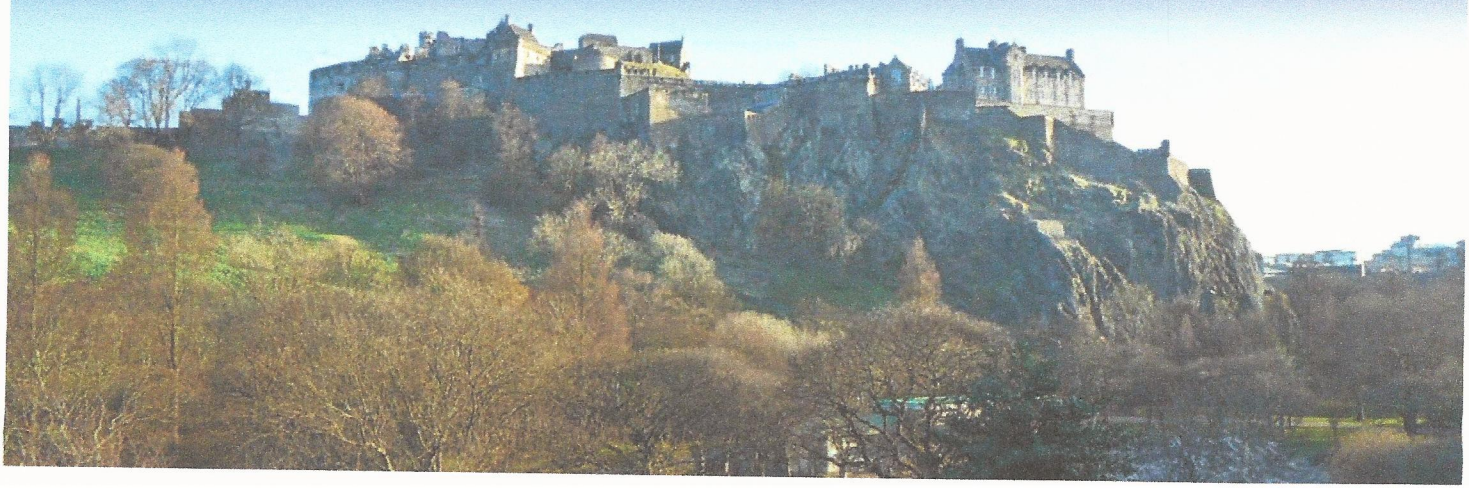

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Juliette Ben Arous[1], Alexander Shevtsov[2], Stepan Remyga[2], Oleg Goryushev[2], Sébastien Deville[1], François Bertrand[1], Laurent Dupuis[1]
[1] SEPPIC, 22 Terrasse Bellini, Paris La Défense, 92806 Puteaux Cedex, France;
[2] FGBI "Federal Centre for Animal Health" (FGBI "ARRIAH"), Yur'evets, 600901 Vladimir, Russia.

FLEXIBLE POLYMER AND EMULSION ADJUVANTS FOR COMBINED LIVE AND INACTIVATED SWINE VACCINES

Introduction: Live vaccines are widely used in pig farming practice and are usually not adjuvanted. We have shown previously that the addition of polymeric or oil in water emulsion adjuvants in a PRRS live vaccine enhanced the protection to challenge of vaccinated animals, and allowed to reduce the antigenic load of such vaccine. In this study we show that these adjuvants can also allow the formulation of efficient combined inactivated/live vaccines for swine against Swine Influenza and Aujeszky's disease.

Methods: Inactivated vaccines against Swine influenza (SIV) were formulated with polymer adjuvant Montanide™ Gel 01 (Gel), emulsion adjuvant Montanide™ ISA 15A VG (15A) or without adjuvant. A non vaccinated group was used as negative control. At day 0, 10 seronegative pigs (15kg) were vaccinated in each group intramuscularly in the neck simultaneously with 2ml of inactivated SIV vaccine and 2ml of Aujeszky's disease attenuated live vaccine. Efficacy was followed by antigen specific ELISA and by a challenge procedure against Aujeszky's virus and SIV (day 42). After challenge clinical signs were followed, nasal viral loads and bacterial over-infections of the lungs were scored.

Results: All vaccines tested were safe. Antibody titers and protection to challenge against SIV was significantly superior for Gel or 15A adjuvanted formulations compared to the non adjuvanted vaccine. Protection conferred by the attenuated part of the vaccine was not reduced by the presence of either adjuvant. Moreover, viral shedding after Aujeszky's challenge was reduced in the Gel group.

Conclusions: These results show that relevant aqueous adjuvants such as Montanide™ Gel 01 or Montanide™ ISA 15A VG are compatible with both inactivated and attenuated viral vaccines for swines. Such adjuvants allow the formulation of multivalent combined inactivated/live vaccines. Such combined vaccines can allow the reduction of the number of injections given to pigs in the field.

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Peggy De Backer[1], Eva De Jonghe[1], Guy Cluydts[1]
[1] SCS Boehringer Ingelheim Comm.V, Brussels, Belgium.

FIELD EXPERIENCE USING A NEEDLE-FREE DEVICE FOR INTRAMUSCULAR INJECTION OF A PCV2/*M HYO* VACCINE MIXTURE COMPARED TO CONVENTIONAL INJECTION WITH A NEEDLE

Needle-free devices offer various advantages compared to conventional needles including a reduced risk of haematogenous spread of pathogens and no risk for broken needles. On the other hand, the high pressure that is applied to vaccines when injected needle-free might have a negative impact on vaccine efficacy. While efficacy of the mixture of Ingelvac CircoFLEX® and Ingelvac MycoFLEX® (referred to as FLEXcombo®) with conventional needles and syringe has been demonstrated extensively, little information is available on the use with needle-free devices. This study compared the performances of pigs vaccinated against PCV2 and *Mycoplasma hyopneumoniae (M hyo)*, either using a needle-free device or a conventional needle, under field conditions on a Belgian farm, positive for M. hyo and PCV2.

Piglets were vaccinated and weighed the day of weaning (~21.4 days) with FLEXcombo®. In total, 329 piglets were vaccinated i.m. with a syringe and needle and 330 piglets were vaccinated i.m. with a needle-free injection device. Ten piglets were left unvaccinated as controls, and were blood sampled at 16 and 21 weeks of age. Individual carcass weights were recorded per treatment group.

Serology in the control pigs confirmed challenge with PCV2 and *M hyo*. No significant differences were observed between the treatment groups with regard to weights, growth days or mortality.

Under the conditions of this study pigs vaccinated i.m. with a full dose (2ml) of FLEXcombo® using a needle-free device performed as well as pigs vaccinated with a syringe and conventional needle on a farm challenged with PCV2 and *M hyo*. This indicates that the efficacy of FLEXcombo® was not impaired by the high pressure used when applying the vaccine needle-free. Based on practical experience, special care needs to be taken with needle-free vaccinators to ensure that the device is used properly and a full dose of vaccine is applied.

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