Long duration of immunity of Coglapix® vaccine in pigs challenged with *Actinobacillus pleuropneumoniae* serotype 2

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**Introduction**

*Actinobacillus pleuropneumoniae* (A.p) is the etiological agent of porcine pleuropneumonia (1) that causes significant economic losses worldwide. Presently, there are 15 serotypes of A.p of biotype I (NAD-dependant) or biotype II (NAD-independent) (2). The bacterin-toxoid vaccine, Coglapix®, using the combination of somatic antigens together with Apx toxoids (ApxI, ApxII & ApxIII) was developed to confer optimal multi-serotype protection against A.p (3). Two separated studies were performed to assess the duration of immunity (DOI) periods of Coglapix® vaccine in susceptible pigs against A.p serotype 2 challenges at 16 and 24 weeks post-vaccination (pv).

**Materials and methods**

Sixty two seven-week-old susceptible pigs were included in 2 different studies; half of them were vaccinated twice with a 2 mL IM dose of Coglapix®, at 3 weeks interval, the others remained as Controls. 16 weeks (1st study) and 24 weeks (2nd study) after the 2nd vaccination, all pigs were challenged by intranasal route with A.p serotype 2 (s2) culture suspension (2.2 x 10⁸ and 2.5 x 10⁸ cfu/pig respectively). For one week after challenge, the pigs were monitored daily for clinical signs of disease (dyspnoea, cough, prostration and anorexia) as well as mortality and clinical scores were calculated thereof. Pigs that died from the challenge during the observation period were given a maximum symptom score the day of the death. The surviving pigs were euthanized one week after challenge and subjected to necropsy where the surface of pneumonic lesions in each of the 7 lobes was determined (0-5 per lobe) and p.cent of maximum lesion score was calculated (4). Lung sampling and tentative A.p isolation was conducted. Statistical analyses (ANOVA, Kruskal-Wallis and Khi²) were performed using the Statgraphics Centurion XVI software.

**Results**

The summarized results of both studies (16 and 24 weeks post vaccination) are presented in tables 1 and 2. Serological analyses using Swinecheck APP 2 Elisa (Biovet, AES Chemunex) confirmed that all pigs were seronegative before vaccination.

**Table 1. Summarized DOI results post-challenge (16 weeks pv)**

<table>
<thead>
<tr>
<th>Treatment group</th>
<th>n</th>
<th>Mortality rate (dead/total)</th>
<th>Cumulated clinical score (%)</th>
<th>Lung lesion score (%)</th>
<th>A.p isolation in lungs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccinates</td>
<td>15</td>
<td>6.7% (1/15)</td>
<td>29±16</td>
<td>17±20</td>
<td>64% (9/14)</td>
</tr>
<tr>
<td>Controls</td>
<td>15</td>
<td>13.3% (2/15)</td>
<td>32±19</td>
<td>42±23</td>
<td>93% (14/15)</td>
</tr>
</tbody>
</table>

a,b: Values with different superscripts differ significantly (p=0.002)

**Figure 1. Relative lung lesion score per group after A.p s2 challenge 16 weeks pv**

**Figure 2. Relative lung lesion score per group after A.p s2 challenge 24 weeks pv**

**Discussion and conclusions**

Coglapix® vaccine conferred protection against heavy serotype 2 challenges until the end of the normal fattening period (26 weeks of age) and even 8 weeks after (34 weeks of age), considering the reduction of specific lung lesions, which is the major efficacy parameter in laboratory conditions. In the longer duration study, the severity of the clinical symptoms was also significantly reduced. To our knowledge, this is the first proof of duration of immunity efficacy of a commercial A.p vaccine in laboratory conditions, which indicates the potential of Coglapix® to cover the whole fattening period in field conditions.

**Literature cited**