Prevalence of *Actinobacillus pleuropneumoniae* serotypes in swine in Germany

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Introduction and Objectives:

Actinobacillus pleuropneumoniae (App) is the etiological agent of pleuropneumonia in pigs. Although an old bacterial pulmonary pathogen, it is still relevant in the 21st century and occurs worldwide.

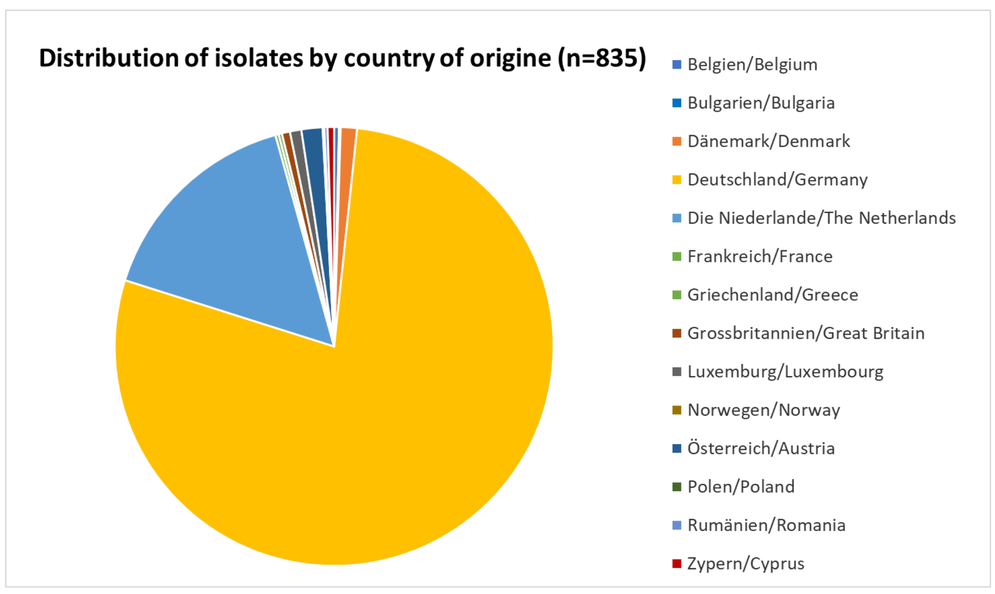
While typing used to be carried out serologically using defined antisera in the past, today serotypes are identified using the serotype-defining capsule genes. This "molecular serotyping" is carried out using a multiplex PCR to detect the cps loci. So far 19 serotypes have been identified.

In general, isolates of the same serotype also code for the same LPS O antigens, although some different serotypes also have the same or very similar O antigens, which can lead to known serological cross-reactions and grouping into serogroups (1). Also phylogenetic analysis of isolates from the 19 serotypes shows clustering of closely related serotypes (2). Because the available data were not up to date, we analyzed serotyping results of *App* strains isolated from swine in Germany and swine sera tested by App-serotype ELISA within the last four years.

Materials and Methods:

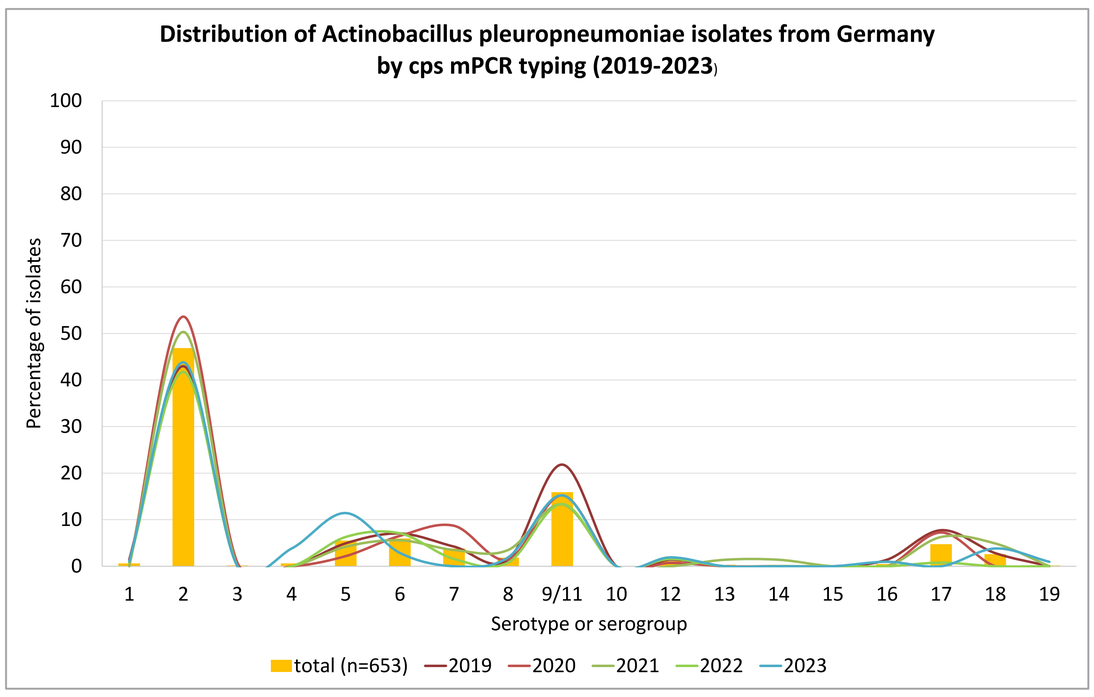
A total of 835 *App* strains isolated from swine during diagnostic examinations between 2019 and 2023 were analyzed for their serotype by multiplex PCR testing (3, 4) based on the *cps* genes.

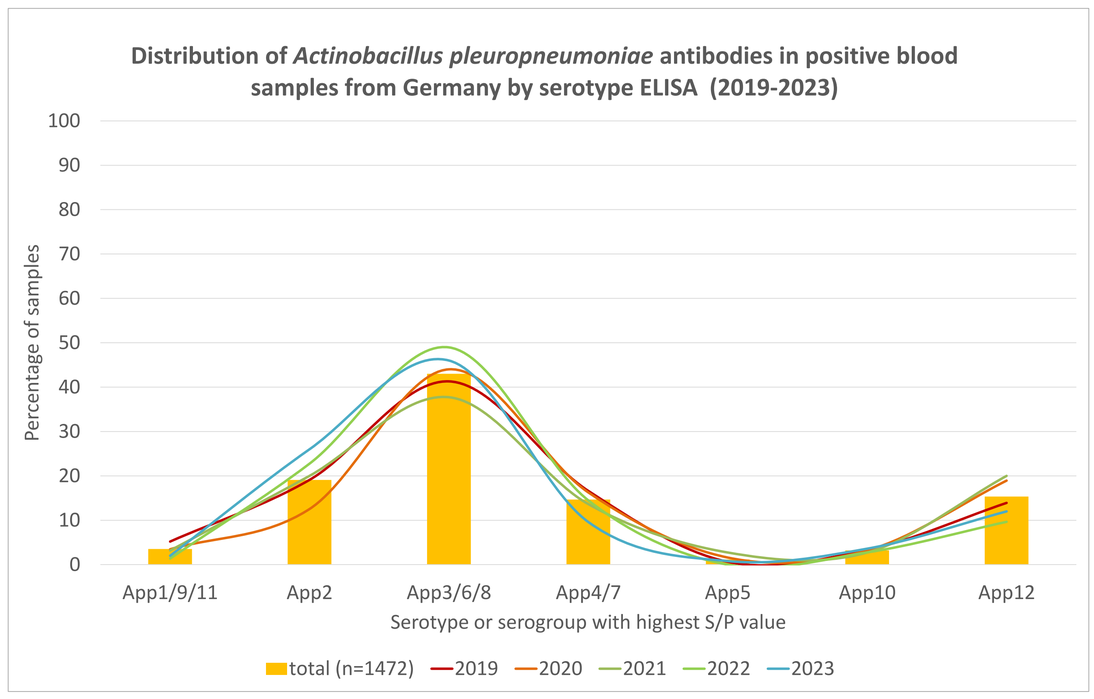
The isolates came from different countries in Europe, mainly from Germany (78.3 %).

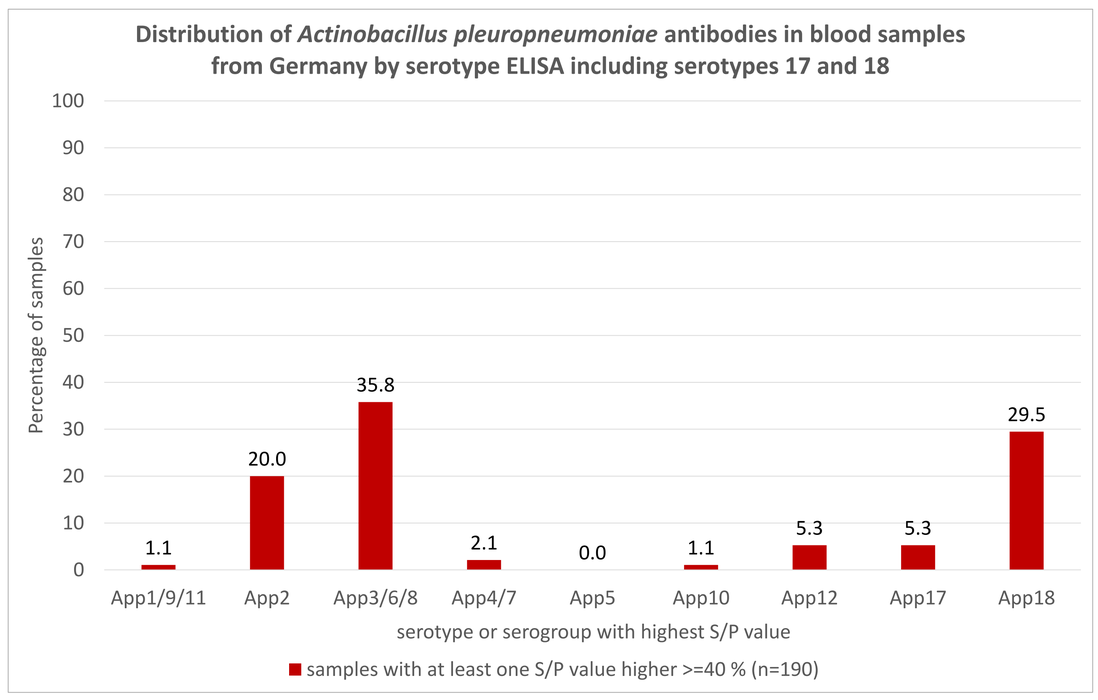


Serologically 2445 blood samples were tested during the same period, including 2040 (83.4%) from Germany using a set of commercial *App* serotyping ELISA (Innovative Diagnostics, France). All samples were tested for antibodies against *App*1/9/11, *App*2, *App*3/6/8, *App*5, *App*10 and *App*12. In 2023, 230 sera were further tested for the serotypes *App*17 and *App*18 using prototype ELISA tests.

Results:







Conclusions:

- ***App*2 remains the most predominant serotype in Germany associated with clinical respiratory symptoms, as all isolates were retrieved from clinical cases.**
- **A definitive determination of the *App* serotype is only possible on isolates, but serotyping ELISA can provide indications of the App serotype; however, contacts with weakly virulent or avirulent App are also detected (*App*3/6/8) by serology, which are not associated with clinical symptoms compared to the isolates.**
- **The new *App* serotypes 17 and 18 occur in Germany associated with clinical respiratory tract infections; however, the serological reactions, especially with *App*18, are much higher in comparison to the PCR findings (29.5% versus 3.8% in 2023), which could possibly be due to cross-reactions with *App*7 (2).**

References:

(1) Dona et al. 2022. Microb Genom. 8, 776; (2) Gottschalk 2015. Proc. ESPHM. 58-60; (3) Bossé et al. 2018; (4) Stringer et al. 2021

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