

STUDY OF THE EVOLUTION OF SALMONELLA PREVALENCE ON INDONESIAN POULTRY FARMS FOLLOWING THE USE OF A COMMERCIAL INACTIVATED BIVALENT SALMONELLA VACCINE

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INTRODUCTION

Salmonella vaccination of poultry flocks is common practice in most countries. Nevertheless, it has recently become a new trend on Indonesian farms. *Salmonella* vaccines have been registered on the Indonesian market to reduce salmonella prevalence at farm level. However, the emphasis on *Salmonella* control has increased due to rising food safety concerns and awareness of antimicrobial resistance created by the local public health authorities. Inactivated vaccines are known to induce the production of antibodies, generally distributed to organs and the gut, providing vertical protection to the offspring, and memory cells as well². Since farmers are adopting vaccination in salmonella control, they would like to understand the efficacy of the use of inactivated salmonella vaccines on their farms.

MATERIALS AND METHODS

Some field studies were conducted for over a year and a half from Feb 2021 to Aug 2022. 33 flocks, 2532 serological samples, and over 500 samples were collected from different companies, including boot swabs, and other tissue samples such as from the gut, liver and spleen for *Salmonella* spp. isolation. Production performance such as clinical signs and mortality were considered because of the presence of different clinical *Salmonella* serotypes, such as *Salmonella* Pullorum, that can have a great impact on birds' viability and the performance of Indonesian poultry flocks. Samples were collected and analysed by local lab AGRILAB with ID Screen[®] Avian *Salmonella* Indirect – Groups B and D for serological samples and cultured isolation for *Salmonella* spp. detection. All the studied farms were vaccinated following HIPRA's recommendation of 2 doses of commercial inactivated *Salmonella* vaccine (AVISAN[®] SECURE) at 8 weeks and 16 weeks of age. Including an inactivated *Salmonella* vaccine in the vaccination programme was the only variable in the studied farms and there was no change in management or other factors such as biosecurity, genetics or feed.

RESULTS

COMPANY N°1

In company N°1, in vaccinated flocks the minimum % seroconversion after the 2nd dose was 78.6% and the mean rate was 88.1%, whereas in non-vaccinated flocks the mean % seroconversion was 6.53% suspected field infection. Annual mortality rates in vaccinated flocks were 4.7%, compared to 6.65% for the unvaccinated flocks.

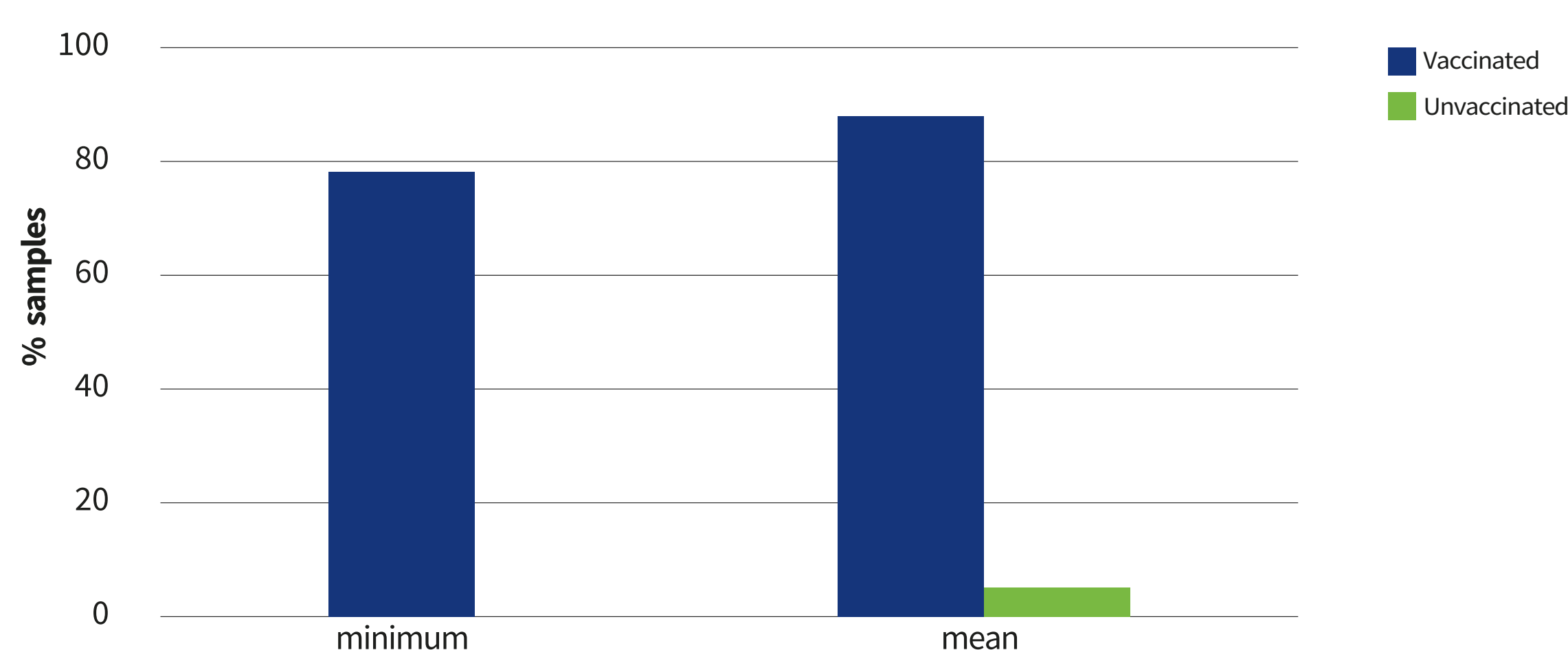


Fig. 1. Minimum and mean rates of seropositivity.

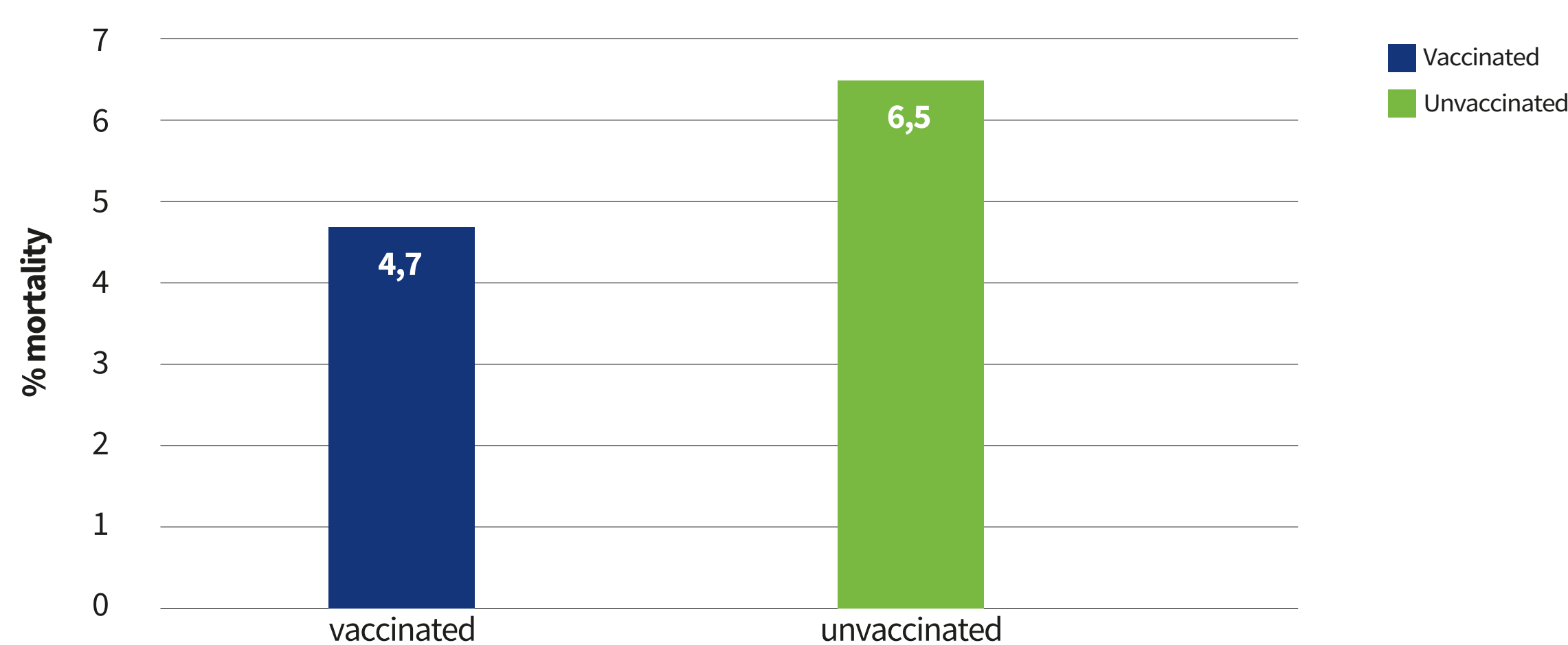


Fig. 2. Mean annual mortality rates

COMPANY N°2

In company N°2, boot swabs and organ samples such as from the gut, liver and spleen were collected for cultured isolation at 7 weeks, 16 weeks, 20 weeks and 31 weeks of age. In the case of the unvaccinated flocks, for boot swab samples, there was an increase in positive rates, from 33% to 67% for the respective samplings, whereas the opposite situation was observed with the vaccinated flocks, where the first sampling showed 67% before vaccination and a reduction in positive isolates after vaccination was observed at 33%.

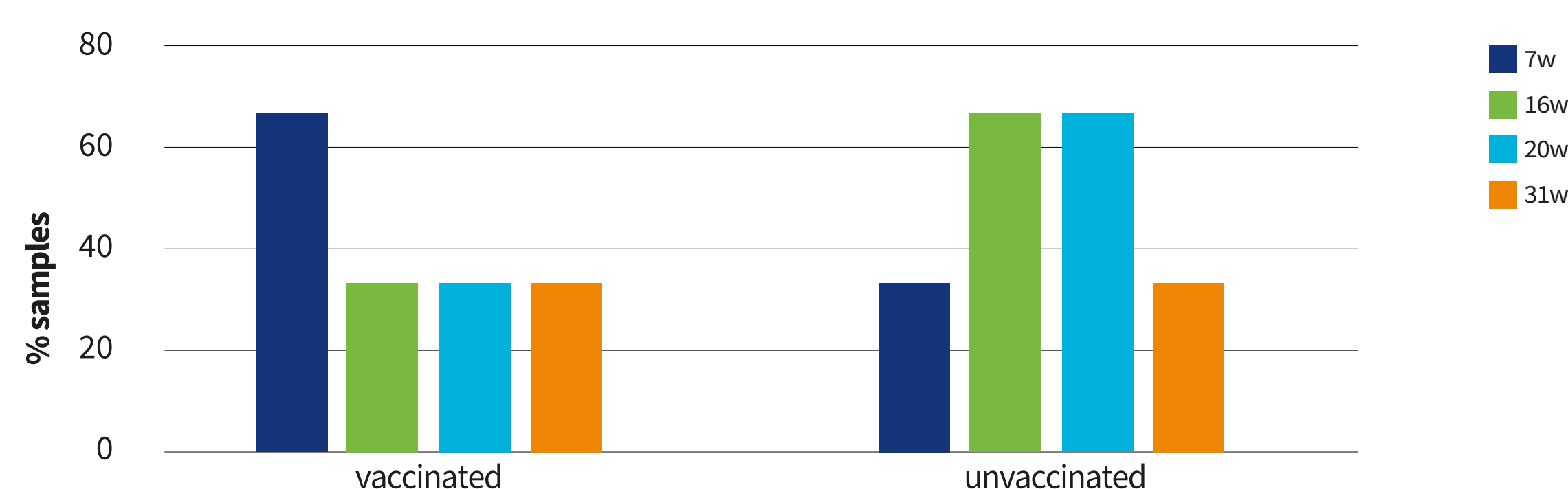


Fig. 3. *Salmonella* boot swab positivity rates before and after pick-up for vaccination (%)

In the organ samples, unvaccinated positive rates were 33% in the samplings at week 16 and 31, while for the vaccinated flocks, no *Salmonella* isolates were found from the organ samples.

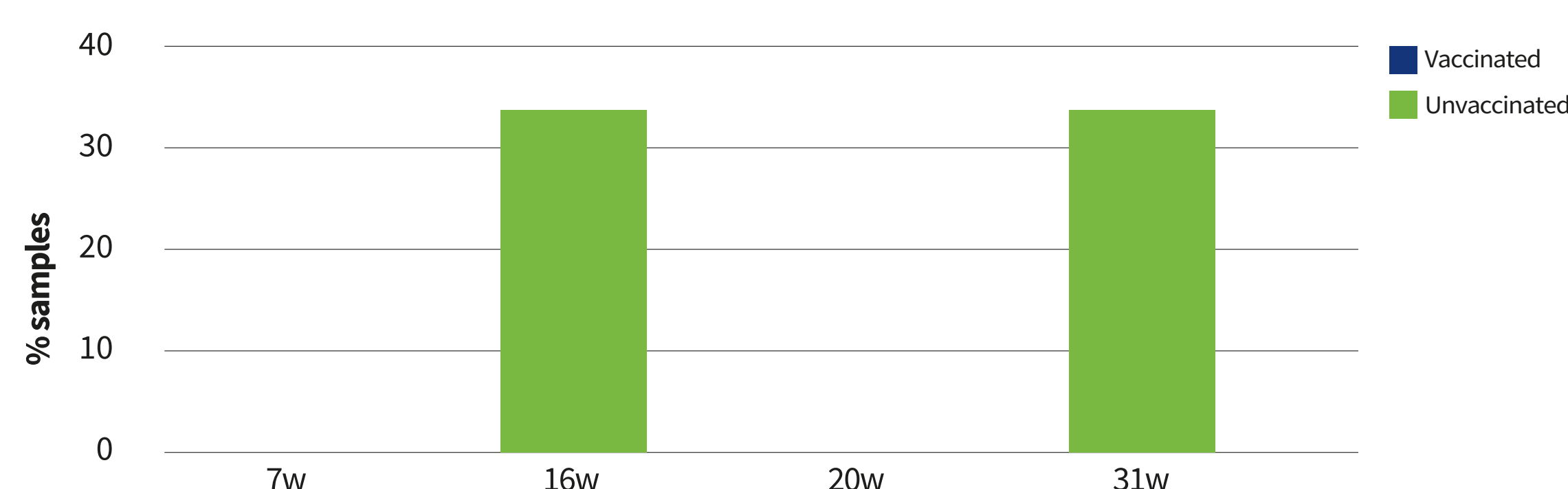


Fig. 4. *Salmonella* organ positivity rates before and after pick-up for vaccination (%)

DISCUSSION

These findings show the crucial protection offered by inactivated vaccines in reducing *Salmonella* spp. in organ colonization and field prevalence rates compared to the unvaccinated birds. Further *Salmonella* epidemiological studies must be carried out to assess the status of *Salmonella* prevalence in Indonesia and the effects of using inactivated *Salmonella* vaccines in poultry flocks.

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