

## 07. Vaccine-take monitoring of a *Salmonella Enteritidis* live-attenuated vaccine

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Salmonellosis is one of the main causes of foodborne disease, with approximately 60 000 human cases in Europe, 39 of which came from egg consumption, were reported in the EU EFSA Report, 2022. In addition to strict biosecurity, live vaccines are an important tool in the fight against *Salmonella* by inducing active immunity to reduce invasion, colonization and persistence in the intestinal tract and internal organs of vaccinated birds. In general, a vaccination program includes 3 administrations of live *Salmonella* vaccine by drinking water to ensure maximum protection. A successful vaccination in layers can be complex to achieve and depends upon many factors and hence the implementation of monitoring the quality of vaccination is critical to guarantee an optimal & consistent immunization. The *Salmonella* vaccine strain is shed by the vaccinated birds for a few days after vaccination, it can be isolated from boot swabs sampling and is easily differentiated from field *Salmonella* strains by using lab techniques. The aim of this study was to evaluate in field conditions, the accuracy of post vaccination faecal sampling method & culture to validate a live *Salmonella* vaccine-take in pullets during rearing period. From March to June 2023, 30 rearing layers flocks located all over France, reared on floor, cages or aviary systems were immunized with a live *Salmonella Enteritidis* double auxotrophic adenine-histidine attenuated strain. 3-5 days post-vaccination after the first or second vaccination, a pair of boot swabs or 200g of faeces per flock were taken and analyzed according to the NF47-100, variation of ISO 6579-1:2017 method including 2 ways of enrichment (MKTTn broth and MSRV media). To differentiate vaccinal strain from field SE strain, DIVA real time PCR or special culture media (kit composed of culture media enriched or not with adenine and histidine) methods were used. In 100% of auxotrophic live vaccine vaccinated flocks, the vaccine strain was recovered 3-5d post-vaccination at different vaccination ages on boot swabs and faeces demonstrating that these laboratory methods can be used routinely in the field. *Salmonella* live vaccine monitoring is key to ensuring optimal vaccination of birds.

Keywords: *Salmonella*; monitoring; vaccination; layers; live-attenuated vaccine