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**Combination of antibiotic treatment and skin test-based culling is a suitable strategy for on farm eradication of Brucella suis biovar 2**

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**Introduction:** Swine brucellosis outbreaks due to Brucella suis biovar 2 (B. suis 2) occur sporadically in continental Europe. Control and eradication is based on O-polysaccharide (O/PS)-based serological tests and full stamping out of infected herds. However, these tests frequently return false positive serological reactions (FPSR) due to infections with other gram-negative bacteria sharing O/PS epitopes. Previously we proved that a skin test using O/PS free cytosolic proteins is highly sensitive and specific, as well as effective to differentiate FPSR from true positives. On the other hand, full depopulation of large herds and outdoor farms rearing endangered breeds is undesirable and antibiotic treatment could be a suitable alternative. Oxytetracycline (OTC) treatment is effective to reduce the clinical impact of the disease but studies about its efficacy in a quantitative way are lacking.

Removal model was used to estimate the transmission rate parameter of B. suis 2 under OTC treatment ($\beta$). Reproduction ratio ($R$) for each strategy was calculated as $R=\beta T$. Three scenarios were used: 70, 200 and 800 infected animals at the moment of the onset of the outbreak.

Results: OTC treatment alone was not effective to eradicate the infection ($R = 1.42$, 95% CI 1.35-1.49). However, if combined with skin test-based culling with a monthly interval between 1 and 10 months, $R$ remained under 0.6 (range 0.06-0.59). The time required to eradicate the outbreak depended on the initial number of infected animals and the test interval.

**Conclusion:** Once the impact of the disease was minimized by the antibiotic treatment, testing and removing skin test positive animals every 4 months resulted in effective eradication in 1-2 years, offering a suitable alternative to full depopulation of infected herds.

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