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A total of 43 pigs, inoculated with Salmonella typhimurium (O:1,4,5,12) and un-inoculated controls were followed weekly by blood and faecal samplings for up to 18 weeks post inoculation (p.i.). Three pigs, inoculated with S. infantis (O:6,7) were followed similarly for 9 weeks. All inoculated pigs, except one, were positive for Salmonella by traditional faecal culture on at least one occasion during the first week of infection, whereafter shedding of bacteria rapidly declined to <10% of the pigs from week 7. All control pigs remained Salmonella negative by culture of faecal samples. When examined serologically in an indirect ELISA using mixed purified LPS from S. typhimurium and S. choleraesuis (O:6,7), all but one S. typhimurium infected pig and all S. infantis infected pigs produced significantly increased optical densities (OD) in the ELISA as compared to the control groups. The maximum anti-LPS response was observed at day 22, when 86% of the S. typhimurium inoculated pigs had seroconverted, while the frequency of seropositive pigs peaked at days 30 (92%) and 37 p.i. (92%). Large variations were found among pigs concerning time of seroconversion (between 6 and 37 days p.i.), maximum OD-level attained (between 8 and 130% of a reference serum) and persistence of reaction. At the time of necropsy, 18 weeks p.i., 67% of the S. typhimurium inoculated pigs were found seropositive, while 100% of the S. infantis inoculated pigs were found seropositive at necropsy, 9 weeks p.i. Salmonella in internal organs were detected at necropsy in 4/22 of the S. typhimurium inoculated pigs with persistent anti-LPS reaction and all 3 S. infantis inoculated pigs but in none of the antibody-negative pigs. The ELISA is therefore suitable for screening for the presence of infection with S. typhimurium or S. infantis on a herd basis. Its suitability for other serotypes of Salmonella will require further testing.