



OCCURRENCE AND DISTRIBUTION OF SALMONELLA SEROVARS ALONG THE FOOD CHAIN AND IN HUMANS IN CENTRAL ITALY, 2020-2025

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Aim. Salmonella remains one of the major foodborne zoonotic agents in Europe and represents a significant public health concern due to its impact on human health and the food production chain. The distribution of Salmonella serovars varies over time according to animal reservoirs, food matrices, production systems and the occurrence of specific epidemiological events, making continuous surveillance essential for the early detection of emerging serovars and outbreak-related trends. This study aimed to describe the occurrence and distribution of Salmonella serovars isolated in Central Italy along the food chain and from human cases during 2020-2025, with the objective of identifying temporal changes, source-specific patterns and emerging signals of public health relevance.

Methods. A total of 2879 Salmonella isolates collected between 2020 and 2025 were analysed by the Regional Reference Laboratory for Enteric Pathogens of the Istituto Zooprofilattico Sperimentale dell'Umbria e delle Marche "Togo Rosati". Isolates originated from the food production chain, including livestock environment, feed, carcass swabs, meat and meat products, cheese and from human clinical samples. Serotyping was performed according to ISO/TR 6579-3:2014, following the White-Kauffmann-Le Minor scheme for the identification of Salmonella serovars based on somatic (O) and flagellar (H) antigens. The distribution of Salmonella serovars was analysed by year of isolation, sample category, and animal species. The frequency and relative proportion of each serovar were calculated within each category to assess temporal trends and differences in serovar distribution across sources.

Results. Of the 2879 isolates, 1042 were from the food pro-

duction chain and 1837 from human samples. The most frequent serovars in the food chain were S. Infantis (25,5%; 266/1042), Monophasic variant of Salmonella Typhimurium 4,[5],12:i:- (MVST) (20,9 %; 218/1042), S. Derby (16,0 %; 167/1042), S. Kentucky (3,7%; 39/1042), and S. London (3,1 %; 32/1042). S. Infantis predominated in livestock environment, meat and meat products, confirming its strong association with poultry-derived matrices and its persistence along the production chain. Conversely, the MVST was the leading serovar in carcass swabs and human isolates, suggesting a relevant contribution of the swine chain to human exposure. Among human isolates, the MVST remained dominant throughout the study period (21,8%; 401/1837), although a decreasing trend was observed from 2020 to 2025. In 2024, S. Strathcona markedly increased among human isolates, indicating the occurrence of a specific epidemiological event. In 2025, an increase in S. Newport among human isolates was associated with another outbreak linked to the consumption of raw sheep's milk cheese. During the same year, an increase in S. Infantis was also observed, associated with a separate outbreak linked to the consumption of cured pork sausage.

Conclusions. The study confirms that Salmonella serovar distribution in Central Italy is dynamic and strongly influenced by food-chain reservoirs. S. Infantis and MVST represent the main serovars of concern, with different epidemiological patterns: the former mainly linked to poultry meat and meat products, and the latter strongly associated with swine carcass swabs and human infections. The emergence of S. Strathcona in 2024 and S. Newport and S. Infantis in 2025 highlights the importance of continuous One Health surveillance to identify evolving transmission pathways and support targeted control strategies.