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Introduction
Salmonellosis constitutes an important public health problem throughout the world. Non-typhoid Salmonella infections commonly cause self-limiting gastroenteritis, but severe infections including bacteraemia and meningitis may occur. In most cases, humans get infected by the consumption of contaminated food often insufficiently heated. Salmonella enterica serovar Enteritidis was the most prevalent serovar isolated from humans in Belgium with a peak of 10 492 isolates in 1999. They are detected especially in eggs, egg products or insufficiently heated poultry and related products [1]. In Belgium, the incidence of this serovar decreased drastically since the introduction of layer flocks vaccination campaigns in 2004. In this study we compare phage typing data from human and non-human S. Enteritidis isolates collected in 2007, 2008 and 2009 in Belgium.

Material and methods
S. Enteritidis isolates, collected from human patients by peripheral clinical laboratories and from meat and meat products (isolated by the official monitoring program of the Belgian Food Agency), were phage typed by the National Reference Centre for Phage typing. Phage typing was performed according to the recommendations of the Central Public Health Laboratory Service (London) [2].

Results
During the period 2007-2009, respectively 476, 317 and 336 human and 109, 85 and 93 non-human S. Enteritidis isolates were phage typed. In 2007, PT1 (24%) was the dominant phage type among human isolates, followed by PT21 (17%); PT4 (15%) and PT8 (13%). In 2008, PT21 (30%) became the dominant phage type, followed by PT8 (16%), PT4 (11%) and PT6 (10%); and in 2009 it was PT4 (19%) followed by PT21 (16%), PT8 (16%) and PT1 (12%). Among the non-human isolates, in 2007, PT4 (34%) was most frequently found, followed by PT8 (19%), PT21 (9%) and PT6 (7%). In 2008, we observed PT4 (29%) as the dominant phage type, followed by PT21 (25%), PT8 (13%) and PT1 (12%); while in 2009, PT8 (33%) became the most important phage type followed by PT4 (16%) and PT28 (15%).

Discussion
Since 2006, the number of laboratory-confirmed cases of human salmonellosis stabilizes at around 4000 cases a year. There was a substantial decrease in the number of S. Enteritidis cases during the period 2004 - 2005 [3]. The causal relationship between the fall in human S. Enteritidis infections and the implementation of the vaccination programme in laying hens in Belgium remains to be established, though this increased vaccination status will certainly contribute to a decreased egg contamination.

In general, the dominant phage types among human and non-human isolates remain the same (PT21, PT4 and PT8). However, some shifts in their distribution were found. In the human isolates, PT4 became the dominant phage type, while among the non-human isolates the PT4 phage type was replaced by PT8. The previous rarely found phage type PT1 was noted in 2007 and in 2009 among the human isolates, while it was only detected in non-human isolates in 2008.

The simultaneous presence of specific dominant phage types in both human and non-human sources warrants further research in order to draw up more accurate action plans and regulations to counter actual event.

References