

R266

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Prevalence of *Escherichia coli* O157 strains isolated from ovine and caprine milk in Gargano (Puglia - Italy)

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Objectives One of the major verotoxin-producing *Escherichia coli* (VTEC) implicated in human illness world-wide is serogroup O157. Undercooked ground beef and unpasteurised cow milk are considered the primary reservoir of *E. coli* O157:H7 and vehicles of the pathogen transmission, whereas no cases related to consumption of sheep and goat's milk are reported. However the isolation of *E. coli* O157:H7 from goats and ewes' milk has been rarely registered also in Italy. Considering that in Puglia there are 5869 local farms of sheep and goats, of which 41% only in the province of Foggia, the aim of this work was to evaluate the presence of virulence genes and of serogroup O157:H7 in sheep and goat's raw milk.

Methods In the period between November 2011 and December 2012 were analyzed 43 samples of raw milk of sheep and goats from 37 farms in the area of Gargano (Foggia). Because the lactating periods of sheep and goats is seasonal (from November through June of subsequent year), caprine and ovine milk samples were only available through these months within the fore-mentioned time frame. For the analysis of the samples was used the method ISO 13136:2012 CEN Technical Specification. The DNA extracts were screened by Real Time PCR for the detection of genetic markers of virulence (*eae*, *stx1*, *stx2*). The samples positive for the genes investigated have been identified by serogroup O157 by Real time PCR using TaqMan technology. As required by the protocol used, screening is followed by a period of isolation and subsequent culture confirmation of isolates by Real-time PCR.

Results 43 samples of sheep and goat's raw milk from 37 farms of the province of Foggia, where manual milking is prevalent, were analyzed. The preliminary results of this study showed that of 43 samples of sheep and goat's raw milk, 51.2% (22/43) were presuntive positive to at least one of virulence genes (*vtx1*, *vtx2*, *eae*) and 13% genes coding for O157 serogroups. Following the execution of confirmatory tests, all the samples have proved negative because no VTEC were isolated and none of the colonies was belonging to serotype O157:H7.

Conclusion In spite of the restricted number of samples, our findings are interesting because the epidemiological role of goats and sheep's milk in the transmission of *E. coli* O157:H7 to humans remains to be established. It is important to underline that sheep and goat's milk have never been recognized as responsible for the transmission of such microorganism to man. The absence of isolation of *E. coli* O157: H7 may be linked low concentrations of the pathogen in the presence of high levels contamination or of natural inhibitors.

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