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Public Health Importance of Some Emerging Zoonotic Diseases in Camels

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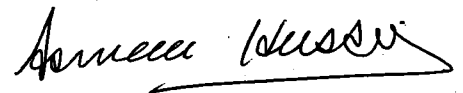
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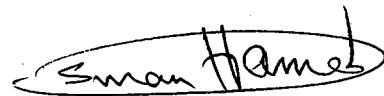
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Abstract

Camels were imported to Egypt in large numbers to be slaughtered for meat consumption. The current work was carried out to clarify the role of camels and attached ticks in transmission of emerging zoonotic diseases. For this purpose, a total of 406 adult ticks as well as blood and fecal samples were gathered from 206 apparently healthy slaughtered dromedary camels (181 imported and 25 local camels) in Bassitin abattoir, Cairo. In addition to 75 blood and 50 stool samples from human contacts. The laboratory investigation of obtained samples revealed that *Salmonella* serovars were recovered from 17 (8.3%) camel fecal samples while all human stool specimens were negative. All *Salmonella* isolates carried *invA* gene whereas *stn* gene was expressed from 12 isolates mainly exotic ones. Twenty one (5.2%) and fifteen (3.7%) ticks were positive by PCR for *C. burnetii* and *Francisella* spp. respectively but blood and feces of camels including those carrying positive *C. burnetii* and *Francisella* spp. ticks yielded negative results for both pathogens. Moreover, *F. tularensis* was not detected among positive *Francisella* spp. ticks. On the other hand, *C. burnetii* and *F. tularensis* antibodies could be found in camel butchers and slaughterhouse workers with seroprevalence rate 18.7% and 9.3% respectively. In conclusion, this study highlighted that camels could play a critical role in transmission of emerging tick borne diseases such as Q fever and *Francisella* infection as well as exotic *Salmonella* strains across geographical boundaries.

(Keywords: Camels- *Salmonella*- Ticks- *Coxiella burnetii*- *Francisella* spp.)

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LIST OF ABBREVIATIONS

Abbreviation	Name
bp	Base pair
BPW	Buffered peptone water
CDC	Centers for Disease Control and Prevention
FAO	Food and Agriculture Organization
FLEs	<i>Francisella</i> like endosymbionts
g	Gram
GOVS	General Organization of Veterinary Services
HIV	Human immunodeficiency virus
<i>InvA</i> gene	Invasion gene
ISO	International Organization for Standardization
MERS-CoV	Middle East respiratory syndrome coronavirus
mg	Milligram
ml	Millilitre
mm	Millimetre

NARMS	The National Antimicrobial Resistance Monitoring System
nm	Nanometre
NTS	Nontyphoidal salmonellosis
PBS	Phosphate buffered saline
qPCR	Quantitative polymerase chain reaction
rpm	Round Per Minute
RV broth	Rappaport-Vassiliadis broth
SPSS	Statistical Package for the Social Sciences
<i>Stn</i> gene	<i>Salmonella</i> enterotoxin gene
TBDs	Tick borne diseases
TSI agar	Triple sugar iron agar
µg	Microgram
µl	Microlitre
µM	Micromolar
WHO	World Health Organization
XLD agar	Xylose- Lysine- Desoxycholate agar

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