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Molecular Detection of T*heileria, Babesia,* and *Hepatozoon* spp. in Ixodid ticks from Palestine

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Ixodid ticks transmit various infectious agents that cause disease in humans and livestock worldwide. A cross-sectional survey on the presence of protozoan pathogens in ticks was carried out to assess the impact of tick-borne protozoa on domestic animals in Palestine. Ticks were collected from herds with sheep, goats and dogs in different geographic districts and their species were determined using morphological keys. The presence of piroplasms and *Hepatozoon* spp. was determined by PCR amplification of a 460–540 bp fragment of the 18S rRNA gene followed by RFLP or DNA sequencing. A new PCR-RFLP method based on the 18S rRNA was designed in order to detect and identity of *Babesia* and *Theileria* spp. A total of 516 ticks were collected from animals in six Palestinian localities. Five tick species were found: *Rhipicephalus sanguineus* sensu lato, *R. turanicus*, *R. bursa*, *Haemaphysalis parva* and *H. adleri*. PCR-based analyses of the ticks revealed Theileria ovis (5.4%), *Hepatozoon canis* (4.3%), *Babesia ovis* (0.6%), and *Babesia vogeli* (0.4%).*T. ovis* was significantly associated with ticks from sheep and with *R. turanicus ticks* ($p<0.01$). H. canis was detected only in *R. sanguineus* s.l. and was significantly associated with ticks from dogs ($p<0.01$). To our knowledge, this is the first report describing the presence of these pathogens in ticks collected from Palestine. Communicating these findings with health and veterinary professionals will increase their awareness, and contribute to improved diagnosis and treatment of tick-borne diseases.