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SERUM CONCENTRATIONS OF TRACE ELEMENTS IN LEISHMANIOTIC DOGS COMPARED TO HEALTHY CONTROLS

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Canine leishmaniasis, a severe and systemic chronic inflammatory disease, is caused by *Leishmania infantum* and is transmitted by the bite of phlebotomine sand flies. Infected dogs are the main reservoir of the parasites and play a relevant role in the transmission to humans, in which the parasite causes visceral leishmaniasis [1]. Some studies checked a potential link among histopathology and some trace elements in canine leishmaniasis [2]. Trace elements include essential and toxic metals, such as heavy metals; due to the environmental pollution, that has caused the contamination of both soil and irrigation water, they can enter the food chain in a wide range of concentrations [3,4,5]. The risk associated with an excessive exposure to heavy metals (lead, chromium, cadmium) has been shown to cause various diseases [4]. Particularly, for some metals, developmental neurotoxicity, cardiovascular effects and nephrotoxicity in adults have been demonstrated. Certain metals have been reported to seriously affect the immune system resulting in a broad range of harmful health effects. Other metals (cobalt, manganese, zinc, copper) are defined essential, while for other elements useful biological activities have not yet been recognized; in general, for all trace elements, an excessive intake may cause toxic effects. Some studies were conducted on the heavy metal content in serum of dogs to evaluate the degree of exposure in urban or industrial areas [6,7]. In the present study we aimed to determine trace element concentrations in serum of dogs to investigate if impaired levels of some metals are a factor contributing to leishmaniasis vulnerability. Elemental composition was determined by using inductively coupled plasma mass spectrometer in serum of dogs with cutaneous leishmaniasis (n=19) and statistically compared to control group (n=74). The serum samples were from dogs living in different geographic areas of Campania Region, endemic for *Leishmania infantum*. After dilution of aliquots of serum 1:10 (v/v) with HNO₃ 1%, the analysis of seventeen trace elements (As, Cd, Co, Cr, Cu, Fe, Hg, Li, Mn, Mo, Ni, Pb, Se, Sr, Tl, V, Zn) was performed using an ICP-MS NexION 350X (Perkin Elmer, USA). Concentrations were calculated by using calibration curves and were expressed as mg/L. Results showed that there were significant differences in the values of Fe, Sr and Mn between two groups (p<0.05). Instead no significant differences in level of other trace elements were observed between leishmaniotic dogs and control group (p>0.05). Fe, Sr and Mn levels were found out to be (2.76±1.77), (0.008±0.004) and (0.064±0.013) µg/mL respectively in leishmaniasis case and statistically different compared to the controls (4.26±3.02), (0.006±0.002) and (0.057±0.023) µg/mL, respectively. The study provides data on trace elements levels in serum of dogs living in Campania and could be useful to assess possible correlations with leishmaniasis. However, preliminary data from this study require further investigation.

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