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A β-mercaptoethanol–modified enzyme-linked immunosorbent assay for diagnosis of canine visceral leishmaniasis

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Abstract

Two immunoglobulin G enzyme-linked immunosorbent assay (ELISA) versions using whole promastigotes of *Leishmania infantum* (syn. *Leishmania chagasi*) treated either with β-mercaptoethanol (β-ME-ELISA) or trypsin (TRYP-ELISA) as antigens were developed for the diagnosis of canine visceral leishmaniasis (CVL). By comparison with the direct agglutination test (DAT; 100%, 31/31; 95% confidence interval [CI]: 86.3–100%), slightly lower sensitivity was demonstrated for the newly developed β-ME-ELISA (93.5%, 29/31; 95% CI: 77.2–98.9%). Sensitivity was higher for β-ME-ELISA compared with TRYP-ELISA (87.1%, 27/31; 95% CI: 69.2–95.8%) in serum samples from dogs with CVL. When tested with sera from 37 healthy dogs and from 45 dogs with clinical conditions other than CVL, a specificity of 97.6% (80/82; 95% CI: 90.1–99.6%) was estimated for β-ME-ELISA as compared to 100% (82/82; 95% CI: 94.4–100%) and 95.1% (78/82; 95% CI: 87.3–98.4%) for DAT and TRYP-ELISA, respectively. Observed agreement was 94.0% (95% CI: 88.7–97.1%) between DAT and β-ME-ELISA (κ = 0.879; 95% CI: 0.803–0.956) and 87.4% (95% CI: 80.8–92.1%) between DAT and TRYP-ELISA (κ = 0.743; 95% CI: 0.636–0.851). Current results advocate application of the new β-ME-ELISA for diagnosis of CVL at the laboratory level and confirmation of results obtained with the DAT in field studies.