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感染隐孢子虫奶牛血液免疫和抗氧化指标的变化

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Detection of Immunity and Antioxidant Indexes in Dairy Cows Infected with *Cryptosporidium*

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摘要

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摘要 目的 检测感染隐孢子虫奶牛血液免疫和抗氧化体系指标。方法 对安徽省某奶牛场325头奶牛粪样采用饱和蔗糖溶液漂浮法检测隐孢子虫感染情况。选择隐孢子虫感染强阳性的7头奶牛作为感染组,同时取7头隐孢子虫粪检阴性奶牛作为对照组,早晨饲喂前从奶牛颈静脉采血,分别测定总蛋白(TP)、白蛋白(ALB)、免疫球蛋白(IgG、IgM和IgA)、中性粒细胞吞噬率、T淋巴细胞转化率、白细胞介素-2(IL-2)、超氧化物歧化酶(SOD)、谷胱甘肽过氧化物酶(GSH-Px)、丙二醛(MDA)、一氧化氮(NO)、丙氨酸转氨酶(ALT)、天冬氨酸转氨酶(AST)、碱性磷酸酶(ALP)、血糖(GLU)、甘油三脂(TG)、Cl⁻和Ca²⁺等19项指标。结果 325头奶牛隐孢子虫感染率为31.7%(103/325),根据卵囊的形态和大小,初步鉴定为安氏隐孢子虫(*Cryptosporidium andersoni*)。与对照组相比,感染组奶牛血清中TP、ALB、IgM、IgA、GSH-Px、ALT、AST、ALP和Cl⁻含量无显著变化(P>0.05);血清中MDA和NO含量分别升高59.9%和28.1%(P<0.05或0.01);而血清中IgG、SOD、GLU、TG、Ca²⁺和IL-2含量,以及T淋巴细胞转化率和中性粒细胞吞噬率分别降低了32.9%、11.1%、18.6%、78.9%、14.5%、7.0%、22.0%和20.2%(均P<0.05)。结论 感染隐孢子虫奶牛部分免疫指标下降,抗氧化酶活性降低,清除体内自由基的能力减弱。

关键词: 隐孢子虫 奶牛 免疫指标 抗氧化指标

Abstract: Objective To detect the immune status and antioxidant system indexes of cows infected with *Cryptosporidium*. Methods Fecal samples of 325 dairy cows were collected at a farm in Anhui and examined by floating saturated solution. 7 positive cows and 7 negative cows from the farm were selected as infection group and non-infection group, respectively. Blood samples were taken from cow's jugular vein before feeding in the morning. 19 indexes of total protein (TP), albumin (ALB), IgG, IgM, IgA, phagocytic rate of white blood cells, T lymphocyte transformation rate, IL-2, superoxide dismutase (SOD), glutathione peroxidase (GSH-Px), malondialdehyde (MDA), NO, alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline phosphatase (ALP), glucose (GLU), triglyceride (TG), Cl⁻, and Ca²⁺ were tested, respectively. Results The infection rate of 325 cows was 31.7% (103/325). The *Cryptosporidium* was identified as *C. andersoni* according to the morphology and size of oocysts. Compared with the non-infection group, there was no significant difference in the concentration of TP, ALB, IgM, IgA, GSH-Px, ALT, AST, ALP and Cl⁻ (P>0.05). The concentration of MDA and NO in the infection group increased by 59.9% and 28.1% (P<0.05 or 0.01), and that of IgG, SOD, GLU, TG, Ca²⁺, IL-2 and the activities of T lymphocyte transformation rate, phagocytic rate of white blood cells decreased by 32.9%, 11.1%, 18.6%, 78.9%, 14.5%, 7.0%, 22.0%, and 20.2%, respectively (P<0.05). Conclusion The change of antioxidant and immune indexes shows that the capability of eliminating free radicals and the immune function have decreased in the *Cryptosporidium andersoni*-infected cows.

Keywords: *Cryptosporidium* Cow Immunity Antioxidant index

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