

RECOVERY AND SPORULATION OF BOVINE *EIMERIA* OOCYSTS AFTER EXPOSURE TO SUB-ZERO TEMPERATURE

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Abstract. The persistence of bovine *Eimeria* oocysts under natural conditions between being shed in faeces and infecting new animals has not been studied in detail. Knowledge on how sub-zero temperatures and microbes affect the existence of *Eimeria* is needed to fully understand the parasite's ecology. This study addressed the topic experimentally by focusing on the effects of storage medium and temperature on the numbers and sporulation ability of the oocysts. Tubes containing either unsporulated or sporulated oocysts were kept at either 22 or -18 °C for one month in either a non-sterile medium (faecal suspension) or oxidizing sporulation medium (2% K₂Cr₂O₇). After the incubation period, the numbers of oocysts were counted using quantitative flotation. Freezing reduced the number of oocysts within 75.9%–91.5%, indicating the oocysts can handle extreme thermal stress. Fewer unsporulated oocysts were counted when frozen in an oxidizing medium compared with those stored in a faecal suspension. At room temperature more oocysts were found in the oxidizing medium than in the faecal suspension, indicating a significant effect of microbes on the persistence of oocysts. However, sporulation did not affect the oocysts ability to tolerate freezing. A second batch of unsporulated oocysts was stored at the two temperatures for a month in the faecal solution and then sporulated at room temperature for a month. *E. alabamensis*, *E. ellipsoidalis*, and *E. zuernii* were capable of sporulate after freezing, suggesting that these species handle the thermal stress better than other species, such as *E. bovis*.

Keywords: *Eimeria*, bovine, ecology, freezing, sporulation, coccidian.