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## EXPERIMENTAL TRANSMISSION OF *Eimeria confusa* JOSEPH 1969 TO THE FOX SQUIRREL\*

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*Abstract:* *Eimeria confusa* Joseph, 1969 from the gray squirrel *Sciurus carolinensis* was transmitted to the fox squirrel *Sciurus niger rufiventer*. This is the first report of the successful cross-transmission of a gray squirrel coccidium to the fox squirrel.

### INTRODUCTION

Joseph<sup>1</sup> described *Eimeria confusa* from the gray squirrel *Sciurus carolinensis* in Massachusetts, USA. Lee and Dorney<sup>2</sup> described the same species and another eimerian from the gray squirrel in Ontario, Canada. Joseph<sup>3</sup> reported the occurrence of *E. ontarioensis* in the fox squirrel *Sciurus niger rufiventer* in Indiana. The present paper reports the successful transmission of the gray squirrel coccidium, *E. confusa*, to the fox squirrel.

### MATERIALS AND METHODS

Fox squirrels were live-trapped from St. Joseph's County, Indiana, using live traps. They were kept in 60 x 60 x 60 cm wire cages and fed a variety of foods such as acorns, sunflower seeds, apples and laboratory chow. Earlier attempts to keep fox squirrels in captivity were unsuccessful. They often die off during their first week of stay in the animal room. This problem was overcome by keeping the squirrels out on the lawn during day time and removing them indoors in the evening during their first 2 weeks in captivity. With this procedure the animals adjusted to the animal room.

Feces from the squirrels were examined daily for 2 weeks before infecting them with *E. confusa*. The inoculum was prepared as follows: *E. confusa* oocysts stored in 2.5% potassium dichromate solution were washed free of the dichromate. The suspension of oocysts was mixed with peanut butter and fed to the squirrel.

All fox squirrels were naturally infected with thin-walled eimerians, probably *E. ascotensis* and *E. lancasterensis*. It was not possible to free the squirrels of their natural infection with these two species.

### RESULTS AND DISCUSSION

All three fox squirrels inoculated with *E. confusa* became infected, with a prepatent period of 8 days. Only one of the squirrels, younger than others as determined by size and tooth development, was visibly ill during the prepatent period. It did not eat or drink on the 5th and 6th days postinfection. All animals passed larger fecal pellets with some mucus during the earlier part of the prepatent period. The patent period was 12 days in the young squirrel while in others it lasted for about 3 weeks.

Although eight different eimerians have been described from the gray squirrel,

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the infectivity of most of them to other squirrels has not been studied. Möller<sup>7</sup> successfully transmitted *E. moelleri* (syn., *E. sciurorum* Galli-Valerio, 1922 of Moller, 1923) from the North American gray squirrel to the European squirrel, probably *Sciurus vulgaris*. Pellerdy<sup>8</sup> attempted unsuccessfully to transmit *Eimeria mira* from *S. vulgaris* to *Spermophilus citellus*. Lee and Dorney<sup>5</sup> and Joseph<sup>2</sup> reported that *E. confusa* could not be transmitted to the red squirrel, *Tamiasciurus hudsonicus*. Joseph<sup>4</sup> observed that most eimerians reported from the gray squirrel

also occur in the fox squirrel. He did not find *E. confusa* in any of the 33 fox squirrels from northern Indiana. Eimerians from rodent hosts are known to have a high degree of host specificity. According to Levine and Ivens<sup>6</sup> who summarized the results of cross-transmission studies of rodent coccidia, *Eimeria* spp. were transmissible between host species in the same genus in eight out of nine cases. The results of the present study are thus in accord with what is known regarding host specificity of rodent eimerians.

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