In Vitro Survival Time of Swine Lungworms

P. Leonard Knight, University of Notre Dame

Lungworms from the posterior lobes of lungs of swine slaughtered at Major Bros. Packing Co., Mishawaka, Ind., were identified as *Metastrongylus apri (= elongatus)* and *Choerostrongylus pudendotectus.* Random samples from hosts on different days of slaughtering showed that the former species was the more prevalent. Experiments were performed to determine the maximum survival time of these worms in non-nutrient media at room temperature (21°-25°C), 4°C, and 38°C, the latter being approximately the body temperature of the pig. At least 10 worms (no differentiation of sex or species) were placed in 100 cc. of more than 50 different solutions. Some of the various solutions tried were: physiological saline; Ringers; Ringers plus varying amounts of sodium, potassium, and calcium chloride; Tyrode's; Ringer-Locke; Krebs-Ringer; Kronecker's; distilled water; doubly distilled water; and tap water.

Although there was no sure way of determining whether the worms were alive or dead, the author resorted to the procedure used by other workers in this field. This consisted of probing the worms with a blunt instrument (camel's hair brush in this case) and if they showed undulatory movements they were alive. This method obviously does not give any indication of the physiological state of the organism. It was observed just before actual death the worms remained outstretched and moved only slightly when probed. This condition usually preceded death by a few hours.

Maximum survival in modified Bueding's Basic Filarial medium (pH 7.0, sodium chloride, potassium chloride, magnesium chloride, calcium chloride, and sodium phosphate) was 14 days at room temperature. Survival in this solution at 38°C was limited to approximately 5 days and activity was greater at this than at room temperature. This activity may cause a more rapid depletion of glycogen and ultimately hasten death. In Bueding's solution at 4°C, the worms survived approximately one day.

Minimal survival time at room temperature was less than one hour in distilled water, tap water, doubly distilled water, and certain non-isotonic solutions. The worms literally explode soon after they are immersed in these solutions.

Since these worms live in the bronchioles of the lungs where oxygen is abundant, it was thought that aeration of the media might increase the survival time. Continuous aeration of the media, however, had no effect. Many workers state sterile media favors *in vitro* survival, but such was not the case in the present study.