

RESUMEN

Se estudiaron aspectos morfológicos, biológicos y de prevención con probióticos en la infestación por *Trichinella spiralis*. Se determinó además, la concordancia y asociación entre la probabilidad de infestación y la edad, sexo, síntomas, signos clínicos y pruebas de laboratorio de pacientes afectados en un brote de trichinellosis ocurrido en la ciudad de Bahía Blanca, Bs As, Argentina. Las experiencias se llevaron a cabo en la cátedra de Parasitología Clínica del Departamento de Biología, Bioquímica y Farmacia de la Universidad Nacional del Sur.

Se determinó la morfología y morfometría de adultos de *Trichinella spiralis*. Los machos de *T. spiralis* midieron $1,04 \text{ mm} \pm 0,04$ de largo por $0,040 \text{ mm}$ de ancho; las hembras $1,84 \text{ mm} \pm 0,136$ de largo por $0,040 \text{ mm}$ de ancho. La cantidad de hembras de *T. spiralis* recuperadas tanto en el contenido como en la mucosa intestinal de ratones BALB/c alcanzó un valor máximo, en el día 5° postinfestación. Con referencia al recuento de huevos/larvas por hembra de *Trichinella spiralis*, el mayor recuento se observó entre el día 5° y 6° postinfestación. La fecundidad media fue 147 Huevos/hembra. La Efectividad Potencial de la infestación experimental fue $55,6\% \pm 4,6$.

Se determinó el efecto de la temperatura sobre la viabilidad de larvas libres y enquistadas de *Trichinella spiralis* mediante los parámetros clásicos: típica postura de coma, ausencia de movimientos de enrollamiento-desenrollamiento y validando la coloración de Azul de Metileno como alternativa útil y sencilla para determinar viabilidad. La viabilidad de las larvas libres/ enquistadas expresada en días fue de: a -30°C 62 / 95 días; a -20°C 150 / 176 días; a 4°C 270/ 325días; a 20°C 456/ 589días y la destrucción del 100% de las larvas por calor fue de $80^{\circ}\text{C}/100^{\circ}\text{C}$ respectivamente. Tanto las larvas libres como enquistadas de la cepa utilizada permanecieron vivas cuando fueron sometidas a temperaturas aún más rigurosas (tanto de congelamiento como calentamiento) que las recomendadas por los Organismos Internacionales para el control de Trichinellosis.

Ratones control y ratones alimentados oralmente con los probióticos *Lactobacillus casei* cepa ATCC 7469 y leche fermentada obtenida por actividad de los gránulos de Kefir, fueron infestados con larvas viables e infectivas de *Trichinella spiralis*. El ciclo evolutivo del parásito se pudo obstaculizar mediante la administración cíclica y continua de los probióticos ya que ambos redujeron la entrada de hembras a la mucosa intestinal, la diseminación de las larvas al torrente circulatorio del hospedador y la posterior invasión de las fibras musculares.

Se estudió en pacientes expuestos a *T. spiralis* durante un brote, la asociación entre infestación, parámetros de laboratorio, y signos clínicos durante la etapa aguda de la enfermedad. Se determinó la concordancia (*K*) entre las pruebas inmunoserológicas más utilizadas para el diagnóstico de Trichinellosis humana. Durante la primera semana de exposición la fiebre, el edema bpalpebral, la mialgia acompañados de un aumento de la enzima creatininfosfoquinasa y de eosinofilia, se asoció significativamente con la positividad de los test inmunoserológicos ELISA, IFI y WB a los 30-35 días post-infestación, encontrándose una concordancia (*K*) perfecta entre los mismos.

Trichinellosis: Biological, experimental studies with probiotics and determinants of infection in an outbreak

SUMMARY

We studied morphological, biological characteristics and probiotics in preventing infestation by *Trichinella spiralis*. It also determined the correlation and association between the likelihood of infestation and the age, sex, symptoms and clinical signs and laboratory tests of patients in an outbreak of trichinellosis occurred in the city of Bahia Blanca, Buenos Aires, Argentina. The experiments were carried out in the chair of Clinical Parasitology, Department of Biology, Biochemistry and Pharmacy, National University of the South.

We determined the morphology and morphometry of adult *Trichinella spiralis*. The males of *T. spiralis* measured 1,04 mm \pm 0,04 long by 0,040 mm wide, the females 1.84 \pm 0.136 mm long by 0,040 mm wide. The number of females of *T. spiralis* recovered both in content and in the intestinal mucosa of BALB/c mice peaked on day 5 ° infestation. With reference to count eggs / larvae per female of *Trichinella spiralis*, the highest was observed between days 5 and 6 after infestation. Average fecundity was 147 eggs / female. Potential Effectiveness of experimental infestation was 55.6% \pm 4.6.

We determined the effect of temperature on the viability of encysted and larvae free of *Trichinella spiralis* from classical parameters: typical posture of coma, absence of movements and validating the Methylene Blue staining as a useful and simple alternative to determine viability. The viability of larvae free / encysted in days was: at -30 ° C 62/95 days at -20 ° C 150 / 176 days at 4 ° C 270 / 325 días; at 20 ° C 456 / 589 days and the destruction of 100% heat of the larvae was 80 ° C/100 ° C respectively. Both free larvae and encysted larvae of the strain used remained alive when they were subjected to even more stringent temperatures (both freezing and heating) than those recommended by International Organizations to Control Trichinellosis.

Control mice and mice fed with oral probiotic *Lactobacillus casei* ATCC 7469 strain and fermented milk obtained by the activity of Kefir grains were infected with viable and infective larvae of *Trichinella spiralis*. The cycle of the parasite was hampered by the continuous and cyclical administration of probiotics since it significantly decreased the entry of the female in the intestinal mucosa, preventing the spread of the larvae in the bloodstream of the host and the subsequent invasion of the fibers muscle

Was studied in patients exposed to *T. spiralis* during an outbreak, the association between infestation, laboratory parameters and clinical signs during the acute stage of the disease. We determined the concordance (K) between immunoserological tests commonly used for diagnosis of human Trichinellosis. During the first week of exposure fever, bipalpebral edema, myalgia accompanied by an increase of the enzyme creatinphosphoquinase and eosinophilia, was significantly associated with test positivity immunoserological ELISA, IFI and WB at 30-35 days post-infestation, finding a match (K) there between perfect.

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