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INCIDENCIA DE MICROSPORIDÍOSE EM ANIMAIS DE ESTIMAÇÃO INCIDENCE OF MICROSPORIDIOSIS IN PETS INCIDÊNCIA DE MICROSPORIDIOSIS EN ANIMALES DE MASCOTAS

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Resumo: *Atualmente os microsporídios estão filogeneticamente caracterizados como fungos, sofrendo perdas genéticas e funcionais significativas, resultantes de um dos menores genomas eucarióticos descritos até hoje. Não possuem mitocôndria, e existem em torno de 100 gêneros e 1.400 espécies. O objetivo deste trabalho foi pesquisar o que vem sendo publicado a respeito da incidência de infecção por microsporídios, em animais de estimação. Palavras chave: fungos, infecção, microsporídios*

Keywords: *fungi, infection, microsporidia*

Resumen *Actualmente, microsporídios están filogenéticamente caracterizado como hongos, genética y funcional que sufren importantes pérdidas, como resultado de una genomas eucariotas inferiores descritos hasta la fecha. Falta mitocondrias, y hay alrededor de 100 géneros y 1.400 espécies. El objetivo de este estudio fue investigar lo que se ha publicado en relación con la incidência de la infección por microsporídios en animales mascotas.*

Palabras clave: *hongos infecciones microsporídios.*

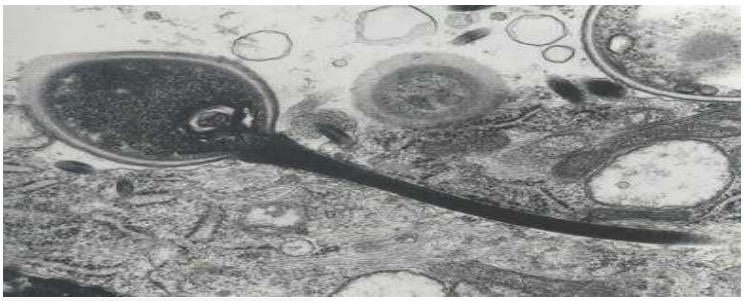
INTRODUCTION

We understand that pets are those that in addition to keeping a symbiosis with the man, is also a source of pleasure and companionship. The relationship between humans and pets already there it is established centuries. Even without erbal communication codes intelligible to homo sapiens except the demonstrations of affection, pets (or pets) win place in mass consumer society just because they need care and require special. (YABIKU, 2003).

In this sense, Grant and Olsen (1999) report that the relationship between humans and ani else has been recognized in recent years and pet ownership is asso ciated the health benefits both emotionally and physically, however, living with animals can also pose health risks due to transmission zoonóethics of infectious diseases, especially in immune-compromised people of. Moreover environmental changes exert influences the proliferation and the appearance of zoonotic parasitic diseases such as malaria, leishmaniasis crypto poridiose, giardiasis, trypanosomiasis, schistosomiasis, and others. Such changes resulting from natural phenomena or produced by human intervention, can al ging the ecological balance and hence the occurrence of pathogens in their wild hosts and vectors (LALLO, 2009)

The microsporidia sp are called species due to their ultrastructural characteristics involving size and morphology of the different stages of development, analyzing how set up your core and spiral how many exist in its polar tubule. (BRAZIL, et al, 1997). Continuing the microsporidia are primitive eukaryotes previously classified as opportunistic protozoa and the most worrying is that considers emerging. Initially described in infections in fish, insects and mammals, infecting various organ tissues such as muscle, kidneys, eyes and lungs, but the location with the highest infections is the digestive tract, being responsible for the death of most of individuals with immune disorders, as HIV-positive individuals. (VERONESI and FOCACCIA, 1997)

More recent studies have come to identify agents of microsporidiosis human, in some species of domestic animals and silváticos. These signs can be induced to suspect the zoonotic transmission of infectious agents. However, despite the study of microsporidiosis arouse a growing interest, little is known on the host range of several species of microsporidia and the role animals can play in the epidemiological chain of microsporidiosis. (MAGALHÃES and MATOS, 2006)



Source: http://www.cdc.gov/dpdx/microsporidiosis/

Another way to very interesting classification is the place where the fungus develops, as some species are restricted to a specific cell in a single organ or system. Yet other cause systemic infection, involving different organs and systems, but it all has been subject to review once with the molecular analysis has been introduced into the study of these parasites.

Microsporidian *Encephalitozoon cuniculi* is commonly described in companion animals, Didier et al, (2004). The mature spores are oval and small aproximately measuring 1.5 mm in width and 2.5 mm in length, and where the core is the material infection penetrates into the tubules and macrophage release inoculate cell. There membrane receptors, Glucosamines glucans. In the cell there is a vacuole, where is the polar tubular extrusion piercing the cell. This mechanism is still unknown

Cats and dogs

The infection of most mammalian hosts in E. cuniculi occurs by ingestion or inhalation of contaminated a host spores. The deiras property ameniti cells possibly rupture and release organisms that infect new cells or resistant forms of environmental spores. In cats and dogs the infection is localized co mo kidneys and liver. (MATHIS, et al, 2005) Microsporidiosis in dogs and cats is mainly caused by the obligate intracellular parasite the Encephalitozoon cuniculi which is a phylum member of microsporidia. In Iran, the sequencing of the products of *Polymerase Chain Reaction* (PCR) confirms these results. It was reported in a recent study, the occurrence of cataract in 19 cats associated with *E. cuniculi*. (BENZ et al, 2011).

A study was conducted with 322 cats European short hair. (Eleven of these cats were submitted to the Department of Ophthalmology at the University of Vienna Veterinary) with cataract and uveitis. In the study the E.cuniculi was classified as a cause of focal anterior cortical cataract and anterior uveitis in cats. (PETRA et al, 2011). Infection with microsporidia appears to be fairly common in pets in Iran, especially in dogs. This finding may indicate the importance of pets as

zoonotic reservoirs of human infections. (JAMSHIDI et al, 2012) A search which were analyzed 87 samples of faeces of domestic animals was performed to detect the possible presence of microsporidia in animals pet in the town of Galicia in Spain. It has been detected and confirmed Enterocytozoon bieneusi spores in stool samples from two dogs and a goat by PCR.

The microsporidiosis is a rare infection in dogs and is best known for its harmful effects on the populations of rabbits. Microsporidial infection seem to be acquired by airway (mouth and nose), when an animal licks or smells like urine with spores of another infected animal.

For this reason, animals that live in kennels are at risk because they live close to each other myth, because the microsporidia can survive for long periods in the environment, and dogs are susceptible to this infection.

Rabbits

Microsporidian E cuniculi was first identified in the brain and kidneys of rabbits exhibiting lethargy, local or generalized tremor. Wright and Craighead (1992) The bodies were shed in the urine, and the authors speculated on the nature and transmission of these protozoa organisms.

Authors suggest that E. cuniculi can infect rabbits through the placenta. Occasionally, an infected rabbit may show neurological signs of ataxia, opisthotonos, torticollis, soreness, or paralysis; other less specific signal as per the weight, can manifest. (HARCOURT and HOLLOWAY, 2003).

This kind of Microsporidian (*E cuniculi*) was also reported in rabbits spontaneously in a laboratory colony (*Oryctolagus cuniculus*). (JEKLOVA et al, 2010). Four fecal samples were reacted with rabbit antiserum E. cuniculi and the results may indicate the importance of domestic animals such as zoonotic reservoirs microsporidia infect man. *Encephalitozoon cuniculi* is probably the most extensively. (ARIAS and LORES, 2002).

The microsporidiosis are known to infect domestic animals as *Enterocytozoon bieneusi,* and *cuniculi, intestinalis ncephalitozoon* and *Encephalitozoon Hellen,* Wagnerova et al., (2013), the microsporidia are common in seawater, freshwater and estuaries constitute a constant threat for aquaculture, -Tovar Rodriguez et al (2011). More than 158 species of microsporidian in seven genera have been documented by infecting fish (COUPLE et al., 2008).

The *E. cuniculi* has been considered a pathogenic zoonosis and described as an opportunistic parasite to immunocompromised humans Mathis et al., (2005). Microsporidian *E.cuniculi* is the most extensively studied Microsporidian and spontaneous infection by this parasite have been documented in rats rabbits rats muskrats.

Authors like Deplazes et al, (1996); Harcourt et al, (2003); and Muller (1988) state that the disease is still endemic in the population of pet rabbits. In epidemiological surveys serum in Switzerland and UK specific antibodies against *E. cuniculi* spores were detected in 7.5% (n = 292) and 23% (n = 26) healthy rabbits and 85% (n = 72) and 71% (n = 65) rabbits.

This effect in animals deemed pet showing neurological symptoms or direct contact with symptomatic animals respectively with base in serological evidence, it was suggested that wild rabbits (*Oryctolagus cuniculus*) represent the natural host of *E. cuniculi*. (WILSON, 1979) There are reports also on hamsters guinea pigs, goats, sheep, pigs, horses, domestic dogs, wild foxes and captive, domestic cats, and various exotic carnivores, and non-primates human Didier, (2005); Ozkan et al, (2011). Three strains were identified genetically *E. cuniculi.* Although far less well documented, the E. cuniculi has also been confused with the agent of the anger and implications for diseases like Typhus, Psittacosis, Leucemia, experimental allergic encephalomyelitis, and Chemical Carcinogenesis. (SHADDUCK and PAKES 1971)
According to Magalhães et al, (2006) a study was conducted with 132 animals distributed in domestic pigeons, exotic birds and dogs. 17 cases were found positivized for microsporidia.

Birds

Bird species that are identified and hellen, it did not find any bibliographic reference that mention birds as hosts of *E. hellen*. However there have been a study conducted in Australia, suggesting that the Japanese finch, could be host *E. hellen*. (CARLISLE et al, 2002).

As has already been mentioned, some authors ventilate the hypothesis that birds are the E. hellen reservoirs and human being, only accidental hosts, developing the disease only in immunocompromised conditions. But as *E. hellen* can be transmitted from birds to humans? (MAGALHÃES et al, 2006).
Studies with 51 samples of fresh feces in South Korea were collected from parrots raised in captivity and kept in private homes. All birds resear exits appeared healthy at the time of sampling. Samples were collected co plotting sheets under the bird cages. (SO-YOUNG, 2011) Fresh poultry droppings were placed in sterile tubes and immediately frozen at 70 ° C until analysis. They were detected and identified genotypes of human pathogenic microporidio. (SO-YOUNG, 2011)
Microsporidia were identified on 8 samples (15.7%); 7 parrots positivated to *Encephalitozoon hellem*, and a parrot tested positive for both *E. hellen* and *Encephalitozoon cuniculi*. In genotypic identification, *E. hellen* was present in genotypes

1A and 2B and *E. cuniculi* was present at the II genotype. Pets kites can be a source of human microsporidian infections. (SO-YOUNG, 2011)

English investigators Curry, (1999) outlines a possible mode of transmission of microsporidia spores, from birds to man, that is, in birds the microsporidia infections are located often in the intestine and kidney, and the spore disposed in manure. As the water content of the poultry waste is very low, they dry quickly leading to formation of organic dusts containing viable spores may initiate infection in humans, particularly if you are immunosuppressed.

It is noted that, microsporidia pathogenic for humans are between 1 and 3 mm, can thus be transported by said inhalable dust (<5 mm), that is, they can reach the lung alveoli. This transmission mode is described for other pathogens including Histoplasma capsulatum and *Chlamydophila psittaci*. (MAGALHÃES et al, 2006).

According to Black et al, (1997) there was an infection in Australian parakeets (*Melopsittacus undulatus*), where the parasite *E. hellem* infected the intestine with neonatal mortality rates ranging from 14 to 75%. There are only two reports of eye infection by E. hellen described in birds, one in a yellow forehead Parrot (*O. oratrix*) (Canny et al, 1999) and another on a Alba cockatoo (*Cacatua alba*) (PHALEN et al. 2006).

The first report of infection in Australian parakeets (*Melopsittacus undulatus*) was made by Black et al. (1997), who found the parasite infecting the intestine, with neonatal mortality rates ranging from 14 to 75%. Infections in agaponis lovebird (*Agapornis spp*.) found the agent in intestinal and renal tissues with positivity rate by 25% in asymptomatic birds. (BARTON et al, 2003).

The body was still detected in cloacal swab striatum lorises (Chalcopsitta scintillata) and in one case of pulmonary and systemic illness in a yellow forehead Parrot (Amazona ochrocephala oratrix) Snowden and Phalen (2004). In ostriches (Struthio camelus) (Snowden and Logan, 1999) and hummingbirds (Calypte anna) (Snowden et al., 2001).
Recently, Magalhães et al. (2006) found positive for E. hellen the bird star (*Bathilda ruficauda*) manon a small bird domestic po jump (*Lonchura domestica*), the Parrot Congo (*Pittances erithacus*) cockatiel (*Nymphicus hollandicus*), Australian parakeet (*M. undulatus*) and domestic pigeon (*Columba livia*).

A survey was carried out over several weeks, with species of hummingbird redeemed in Los Angeles County (USA). The birds were subjected to diagnostic evaluation in Health System of Laboratory Animal and Food Security California. The species of hummingbird C. Anna were included (Anna's hummingbird) chinned (blackchinned hummingbird) and Selasporus sasin (Allen hummingbird). (SNOWDEN et al, 2001) Infection with *E. hellem* in hummingbirds adds to the growing number of reports of infections relation microsporidial in a variety of host birds. To the authors' knowledge, this is the first report microsporidial infection in wild birds. The parasites were identified in the histological studies with lesions on Calypte Anna. Spores were found in two hummingbirds.

The presence microsporidia spores also newcomers bird feces confirmed that the infection was introduced into the wild. (Snowden et al, 2001) In this sense as the eye infection there are only two reports of infection by E. hellen described in birds, one in a yellow forehead Parrot (A. o. Oratrix) Canny et al., (1999) and another in a cockatoo alba (white cockatoo) (PHALEN et al., 2006).

In rodents guinea pigs, it described encephalitis and nephritis (Illanes et al., 1993; Gannon, 1980) associated with the syndrome of "sudden neonatal death" (SNOWDEN et al., 2009).

According to Souza, (2013) were collected 386 samples of pet feces, which are: 186 samples of rabbits (*Oryctolagus cuniculus),* 78 chinchilla (*Chinchilla lanigera),* 52 hamsters (*Golden Hamster and Cricetulus griseus*) 33 guinea India (*Cavia porcellus)* 22 ferrets (*Mustela putorius*) and 15 mice (Musmusculus) of different ages and apparently healthy, with no history of previous disease.

Continuing the 386 samples submitted to nested polymerase chain reaction (nested PCR), 44 (11.40%) samples were considered positive for *Cryptosporidium spp.* Among them, 25 (56.82%) were rabbits six (13.64%) of hamsters five (11.36%) of chinchillas, four (9.09%) in guinea pigs and four (9, 09%) mices. (SOUZA, 2013).

Pigs

There are reports of intestinal infection Encephalitozoon in raising pigs on a farm in Slovakia. The spores were detected by microscopic visualization direct the stool nuts 25 27 (92.6%). This conclusion was further supported by the presence of serum logically intestinalis specific antibodies and by a reaction hate ca species specific polymerase (PCR). (VALENČÁKOVÁ et al, 2006).
As Valencáková et al, (2006) this is the first report of infection of pigs by E. intestinalis in Europe, more precisely in Slovakia. Blood and stool clinically healthy pigs and 27 randomly selected, between 75% and 25% White Slovakia breeding Landrace pigs.

The presence of spores in 25 of 27 (93%) in stool sample were detected by direct microscopic visualization. In the world, infections by E. intestinalis in pigs have been described only for Bornay-Llinares et al in (1998). (VALENČÁKOVÁ, 2006).

Reptiles

Studies with 240 species of pet snakes took place in China where one can describe pathogens such as microsporidia serpents, the *Enterocytozoon bieneusi*. We collected 240 fecal specimens of two species of captive snakes, (Indian Cobra in number 99) and Ptyas mucosus (Eastern Snakes you rat in number of 141) in Guangxi, China. (KARIM et al, 2015)
Cryptosporidium serpentis microsporidia was identified in three samples (2.1%) oriental rat snakes. Caryospora was found in 5.4% of specimens, of specimens, including eight snakes (8.1%) and five snakes rats (3.6%), and represented six new species - *Caryospora sp.* SKC-2014A for *Caryospora sp*. SKC-2014 f. (KARIM et al, 2015)

Three new species were discovered as *Eimeria sp*. (SKE-2014) were detected in three samples (2.1%) rat snakes. Besides dis so, *Sarcocystis sp*. SKS-2014. The rates of infection and. bieneusi were 3.0% and 5.7% snakes in rat snakes. (KARIM et al, 2015) Of 240 fecal samples snake analyzed three (3 / 240,1,3%) were positive for Cryptosporidium and all three were samples of Oriental rat snakes (3 / 141,2,1% thirteen samples (13 / 240.5 , 4%), including eight snakes (8 / 99,8,1%) and five ra snakes to (5/141,3,6%), They were positive for Caryospora. Three species of rat serpents (3 / 141, 21%) samples were positive for *Eimeria* and a charge was positive for sarcocystis. (KARIM et al, 2015)

According to Karim et al, (2015), eleven samples (11/240, 4.6%) were positive for *E bieneusi*, including three snakes (3/99, 3.0%) and eight rats (8/141, 5.7%;). The study also found that the snakes in China could be infected through the enteric protozoa, the microsporídi zoonotic as *E. bieneusi.* The results suggest the possibility that the E.
bieneusi is present in animals that were consumed by snakes

Results and discussion of the data

They identified a total of 52 studies, including books, online articles in full, printed and electronic journals available. In the years 1907, 1922, 1954, 1971, 1979, 1980, 1985, 1992, 1994, 2001, 2007 and 2008 and also in 2015, it was only found an article. In 1996, 1998 and 2002-2004, there were two articles. From 2012-2013, two articles. In 1997, 2005, 2009 and 2010, were found three articles. In 1999 and 2006, we found only four articles. And in 2011, five articles. Authors who did not refer exclusively to infected animals were the basis for the construction of this article. It chose to highlight the journals, authors and year of publication, as Table I below.

Table 1. Books and Articles raised through the internet

Title of Book or Article	Author (es)	Year of publication
First molecular characterization of enteric protozoa and the human patho genic microsporidian *Enterocytozoon* bieneusi, in captive snakes in China	Karim Robiul MD, Yu Fuchang, Li Jian, Li Junquiang, Zhang Longxian, Wang Rongjun et al.	2015
Humoral immune response and spreading of *Encephalitozoon cuni culi* infection in experimentally infected ponies.	Wagnerova P, Sak B, Kvetonova D, Marsalek M Langrova I, Kvac M.	2013
Ocorrência de *Cryptosporidium Spp* em animais exóticos de companhia no Brasil	Souza Sato Milena	2013
Précédé de Considérations générales surl'espèce ovine par le Comte Guy de Charnacé.	Baudement E.	2012
Identification of *Encephalitozoon* and *Enterocytozoon* (Microsporidia) Spores in Stool and Urine Samples Obtained from Free-Living South American Coatis (Nasua nasua)	Lallo Anete Maria, Calabria Patricia, Bondan Fernandes Eduardo Milanelo Liliane.	2012
Detection of *Encephalitozoon cuniculi* in the feline cataractous lens.	Benz P. Gunter Maas, Csokai Jacqueline, Fuchs Baumgartinger Andrea Schwendenwein Ilse et al.	2011
DNA detection and Genotypic identi fication of Potential Human Pathoge nic microsporidia of symptomatic. Pet Parrots in South Korea as a risk factor for Zoonlotic Emergence	So-Young L, Sung-Seok L Jovem SL, Hee-Myung P	2011
Fish microsporidia immune response immunomodulation and vaccination	Rodriguez Tovar LE, Speare DJ, Frederick Markham RJ	2011
Encephalitozoonosis in New Zeland rabbits and potential of transmission risk	Ozkan O, Ozkan AT, Zafer K.	2011
Microsporidia in household dogs and cats in Iran; a zoonotic concern.	Jamshidi SH, Tabrize AS, Bahrami M, Momtaz H.	2011
Usefulness of detection of specific IgM and IgG antibodies for diagnosis of clinical Encephalitozoonosis in pet rabbits.	Jeklova E, Jeki V, Kovarcik K, Hauptman K, Koudela B, Neu Maye H et al.	2010
Second -generation environmental sequen cing unmasks marine metazoan biodiversity	Fonseca VG, Gary R Carvalho Way Sung, Harriet F Johnson	2010
Ceratoconjuntivite por *Encephalitozoon hellem* em periquitos agapornis spp. no Brasil: relato de caso	Nakamura AA, Homem CG, Garcia SD, Meireles MV.	2010
Persistência	Vieira FJ.	2009
Encephalitozoon cuniculi infections in dogs: a case series.	Snowden KF, Lewis BC, Hoffman J, Mansell J.	2009
Ocorrência de Giardia, Cryptospo ridium e Microsporídios em animais silvestres em área de desmatamento no Estado de São Paulo, Brasil	Lallo Anete Maria.	2009

A new microsporidian parasite, sp. (Microsporidian) infecting the teleostean fish, Potamorrhaphis guianen sis from the river Amazon. Morphological, ultra structural and molecular characterization.	Casal G, Matos E, Teles Grilo Ml, Azevedo C.	2008
Microbial population structures in the deep marine biosphe re.	Huber JA, Mark Welch DB Morrison HG, Huse SM, Neal PR Butterfield	2007
First Report on Encephalitozoon Intestinalis In fection of Swine in Europe	Valencakova Alexandra, Balent P, Huska M, Novotny F, Luptakova Lenka	2006
Diversity in the deep sea and the underexplored 'rare biosphere'	Sogin ML, Hilary G Morrison Julie A Huber, Welch Mark David Huse M Susan, Philip R Neal et al.	2006
Encephalitozoon hellem as the cause of a unilateral chronic keratoconjunctivitis in a umbrella cockatoo (Cacatua alba).	Phalen DN, Logan KS Snowden KF	2006
Aves e cães como potencial fonte de infecção zoonótica por microsporídeos para o Homem.	Magalhães N, Lobo LM, Antunes Francisco, Matos O.	2006
Zoonotic Potential of the Microsporidia	Mathis Alexander, Weber Rainer, Deplazes Peter	2005
Microsporidiosis an emerging and opportunistic infection in humans and animals	Didier ES.	2005
Animais de estimação:lucros estimados	Yabiku RM	2005
Encephalitozoon infecção em aves	Snowden KF, Phalen DN	2004
Encephalitozoon cuniculi strain III is a cause of Encephalitozoonosis in both humans and dogs	Didier J Peter, Snowden Karen Albvarez Xavier, Didier S. Elisabeth	2004
Encephalitozoon cuniculi in pet rabbits	Harcourt Brown FM, Holloway K	2003
Prevalence of Microsporidian spores shed by asymptomatic lovebirds eviden ce for a potential emerging zoonoses	Barton Casey E, Phalen David N, Snowden F.	2003
Microsporidiosis in a gouldian finch Erythrura [Chloebia] gouldiae.	Carlisle MS, Snowden K, Gill J, Jones M, O'Donoghue P, Pro Civ P.	2002
Enterocytozoon bieneusi (Microsporidia) in Faecal Samples from Domestic Animals from Galicia, Spain	Arias C,Aguila Del C, Lores B.	2002

Morphological and molecular characterization of *Encephalitozoon hellem* in hummingbirds.	Snowden K, Daft B, Nordhausen RW	2001
Molecular identification of *Encephalitozoon hellen* in a ostrich	Snowden K, Logan K.	1999
Preventing zoonotic diseases in immuno compromised persons the role of physi cians and veterinarians emerging infections Diseases	Grant S, Olsen CW.	1999
Microsporidian keratoconjunctivitis in a double yellow headed Amazon parrot (Amazona ochrocephala oratrix)	Canny CJ, Ward DA, Patton S et al.	1999
Human microsporidial infection and possible animal sources. Current Opi nion in Infectious Diseases.	Curry A	1999
Untersuchungen zur Diagnostik Biolo gie und Verbreitung von Microsporidi en bei Kaninchen und anderen Tierarten	Muller C	1998
Immunologic, microscopic, and molecular evidence of Encephalitozoon intestinalis (Septata intestinalis) infection in mammals other than humans.	Bornay Llinares FJ, Da Silva AJ, Moura H, Schwartz Da, Vivesvara GS, Pieniazek Nj et al.	1998
Tratado de Infectologia	Veronesi Ricardo, Focaccia Roberto	1997
Microsporidiose humana adquirida	Síndrome de imunodeficiência Brasil P, Lima D Bonfim de Moura	1997
Encephalitozoon hellem in budgerigars(Melopsittacus undulates)	Black SS, Steinohrt LA, Bertucci Dc et al.	1997
The Microsporidia of Vertebrates	Canning EU, Lom J.	1996
Molecular epidemiology of Encephalitozoon cuniculi and first detection of *Enterocito zoon bieneusi* in faecal samples of pigs.	Deplazes PA, Muller Mathis, c Weber.	1996
Protozoal diseases. In: The Biology of the Laboratory Rabbit	Pakes SP, Gerrity LW	1994
Spontaneous encephalitozoonosis inx experimental group of guinea pigs.	Illanes OG, Tiffani Castiglioni E Edwards JF, Shadduck JA.	1992
Head tilt in rabbits caused by pasteu rellosis and Encephalitozoonosis.	Kunstyri I, Naumann S.	1985
A survey of *Encephalitozoon* cuniculi in laboratory animal colonies in the United Kingdom, Laboratory Animals	Gannon J.	1980
Encephalitozoon cuniculi in wild European rabbits and a fox.	Wilson JM	1979
Encephalitozoonosis (nosematosis) and toxoplasmosis	Shadduck JA, Pakes SP.	1971
Common infectious disease of labora tory rabbits questionably attributed to *Encephalitozoon cuniculli*	Robinson JJ.	1954
Infectious motor paralysis in young rabbits.	Wright JH, Craighead EM	1922
Traité de Zootechnie Tome I	Sanson A.	1907

Conclusion

The Microsporidia are primitive eukaryotes that persist probably due to lack of sanitation, and health education. It is known that the oocysts are resistant to chlorine and there is also the danger of eating raw meat. The microsporidia have been verified in the 80s, in individuals infected with HIV. Currently cause infection in a variety of invertebrates and vertebrates. Nowadays, many cases of microsporidiosis have been identified including also infect a variety of animals including domestic animals, causing diarrhea and processes in HIV / AIDS patients. Still are incipient publications on microsporidia in pets. We can also notice that the publications in reference to microsporidios there are aplenty. But as the Microsporidian *Encefalitozoon intestinalis*, it is still incipient. This study does not end and we continue to look for major publications about *E intestinalis*.

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