

# PREVALENCE OF *SARCOCYSTIS* INFECTION IN HORSES IN MONGOLIA

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**Abstract.** *Sarcocystis* infection was detected in 93% of horses in Mongolia. Using the compress method, sarcocysts were found in the muscles of the diaphragm, heart and tongue in 40 of the 43 horses that were slaughtered at the Makh Impex Meat Company in Ulaan Baatar in July 1998. The muscle of the tongue showed the highest rate (97.5%) of infection. The distribution of sarcocysts in the muscles was positively correlated with horse age; the rate of detection was significantly lower ( $p=0.01$ ) in the under 10 year old group than the older group. All horses were apparently healthy and were slaughtered for human consumption.

## INTRODUCTION

*Sarcocystis* species commonly form cysts in the musculature of herbivorous intermediate hosts; a carnivore is the definitive host. Horses may be infected with four species of *Sarcocystis*: *S. neurona*, *S. bertrami*, *S. equicanis* and *S. fayeri*; the prevalence of these parasites in horses has been reported by Dubey *et al* (1977), Edwards (1984) and Saito *et al* (1995). An investigation into the prevalence of *Sarcocystis* spp in horses in Mongolia is reported here, bearing in mind the human consumption of horse meat.

## MATERIALS AND METHODS

The study was conducted in July 1998 at Makh Impex Meat Company slaughterhouse in Ulaan Baatar (the capital city of Mongolia); the company operates the largest slaughterhouse in Mongolia. For meat exporting, livestock from the whole country were carried into this slaughterhouse for treatment and meat inspection. For local consumption purpose, the

slaughter is done locally at small abattoirs or at the animal owner's house.

One hundred and twenty-nine samples of horse diaphragm ( $n=43$ ), heart ( $n=43$ ) and tongue ( $n=43$ ) were examined to detect sarcocysts. Two 8 mm pieces of muscle were squashed between two glass slides (compression method) and examined for cysts by light microscopy ( $\times 100$ ); two preparations were made from each muscle sample in order to determine whether an animal was infected.

## RESULTS

As shown in Fig 1, *Sarcocystis* was isolated from 93.0% (40/43) of the horses. The rates of detection in the tongue, diaphragm and heart were 97.5%, 45.0% and 15.0% respectively. The rates of detection by age were: four year olds 16.7%, five and seven year olds 33.3%, nine year olds 44.4%, ten year olds 33.3%, eleven year olds 50.0%, twelve year olds 53.3%, thirteen year olds 50.0%, fourteen year olds 47.6%, fifteen year olds 75.0% and sixteen year olds 66.7% (Fig 2).

## DISCUSSION

In the USA, Dubey *et al* (1977) reported prevalence rates of 13-21% using a trypsin

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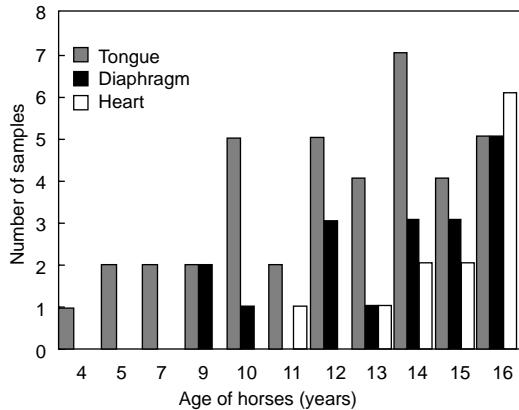


Fig 1—Muscle sample positive for sarcocysts.

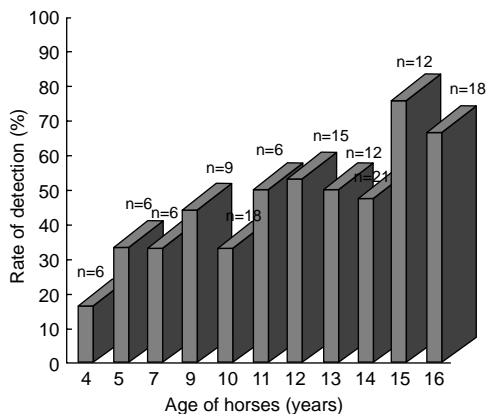


Fig 2—Percentage of sarcocyst detection in muscle samples. (n=sample number).

method for samples of heart, diaphragm and esophageal tissue. In the UK, Edwards (1984) reported 62% (n=394) prevalence using the same method: this was positively correlated with horse age (2 to >8 years; 28.6%-88.9%). In Japan, Saito *et al* (1995) reported a 14% (n=50) prevalence using a direct method.

The results of the present study revealed a high prevalence of *Sarcocystis* infection (93%) in horses in Mongolia; this prevalence rate is significantly higher than is found in other countries.

It was found that tongue samples were the most likely to be infected (97.5%): this finding

suggest that tongue muscle may be the best source of sarcocysts, rather than the diaphragm, as claimed by Saito *et al* (1995). The distribution of the sarcocysts in tongue, diaphragm and heart muscle was positively correlated with horse age; this increase in the rate of infection with age suggests that horses are infected with *Sarcocystis* repeatedly and that the sarcocysts accumulate.

Humans serve as the definitive host for two species of *Sarcocystis*: *S. hominis* and *S. suihominis*; humans also serve as the intermediate host for several unidentified species of *Sarcocystis*. Wong and Pathmanathan (1992) reported that 21% of human skeletal muscle sarcocystosis in tongue samples in Malaysia. Habeeb *et al* (1996) suggested that *Sarcocystis* could be the cause of some diseases that are presently regarded as idiopathic.

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