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SUMMARY

Title: Studies on Sarcocystosis in Cattle and Goats in Sri Lanka

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Period of Contract: 20/4/1995 - 30/9/1996

Scientific Background/objectives of Project

Sarcocystis species are protozoal parasites found in man and many species of animals. Besides the zoonotic potential of the parasite, the cysts of Sarcocystis in meat are a serious meat hygiene problem. Moreover, pathogenic species of the parasite cause disease and/or death to the host. Since cattle and goats can act as the intermediate host, this project was aimed at investigating into the prevalence of Sarcocystis species in the meat of cattle and goats intended for human consumption in Sri Lanka. In addition, muscle lesions caused by the parasite was studied.

Experimental Method

During a one year period (April 1995 - April 1996), a total of 1730 samples of skeletal muscle and oesophagus were collected from 384 cattle and 545 goats slaughtered at the Kandy and Colombo Municipal Abattoirs. All the carcasses were visually examined for the presence of macro-cysts of Sarcocystis species. Subsequently,

pepsin-HCl digestion technique was employed to detect the bradyzoites of Sarcocystis species in the tissue samples. Morphological features of the parasite and the associated lesions were studied histologically using muscle sections stained with haematoxylin and eosin. Different species of Sarcocystis were identified based on their morphological features.

Results obtained

Sarcocystis cysts containing a large number of bradyzoites were found in the muscle tissue of both cattle and goats. The macro-cysts that appeared as white streaks were seen only in the carcasses of cattle.

Micro Sarcocystis cysts were seen in the sarcoplasm of the myocyte of striated muscles. Some of the affected muscle fibres showed loss of striations, hyalinisation, fragmentation and myositis characterised by infiltration of mononuclear inflammatory cells. Gross lesions, i.e. greenish discolouration and serous fat atrophy were seen in the muscle tissue of the animals severely infected with Sarcocystis species.

During the investigation period, approximately 60,000 kg of meat and carcasses worth rupees 5,700,000 were condemned due the presence of Sarcocystis macro-cysts and lesions at the Colombo abattoir.

Of the cattle carcasses examined, 291 (75.8%) contained the parasite in their musculature. In contrast, only 193 (35.4%) of the goats examined were found to be infected with the parasite.

Based on cysts morphology, three different species of Sarcocystis, viz., S. cruzi, S. hirsuta and S. hominis were identified in the cattle. However, only one species of the parasite, viz. S. capracanis was found in the goats.

Conclusions

Findings of the present study indicate that a large proportion of our cattle (75.8%) and goat (35.4%) population remains as a potential source of Sarcocystis infection for the susceptible animals. At least, three species of Sarcocystis, viz. S. cruzi, S. hirsuta and S. hominis are found in the cattle. However, only one Sarcocystis species, viz. S. capracanis is seen in goats in the country.

It is also evident that severe infection with Sarcocystis species causes substantial economic losses to the country's cattle industry in terms of condemned meat and carcasses. Further studies are, therefore, necessary to develop an effective control programme that will minimise the economic losses caused by sarcocystosis.

Literature reporting work done

Gunawardena, G.S.P.de S., Navaratna, M.B., Dharmawardena, I.V.P. and Gammulla, Y. (1996) Prevalence of Sarcocystis infection in slaughtered cattle and goats in Sri Lanka. Proc. 52nd annual research sessions of the Sri Lanka Association for the Advancement of Science.