

TWELVE YEARS OF ACTIVITY OF THE INTERNATIONAL *TRICHINELLA* REFERENCE CENTRE

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Summary :

The ITRC is the official reference laboratory of both the International Commission on Trichinellosis (since 1988) and the International Office of Epizootics (since 1992). The ITRC was created as a repository for *Trichinella* strains and as a source of materials and information for international research in 1988. To date, about 900 isolates of human and animal origin from throughout the world have been examined and identified by new procedures developed at the ITRC or in collaboration with other institutions. Using material from this collection, the ITRC has provided a complete revision of the systematics of the genus *Trichinella*. The ITRC database can be consulted by accessing the web-site: www.simi.iss.it/trichinella/index.htm.

KEY WORDS : trichinellosis, reference centre, International Office of Epizootics.

HISTORY OF THE INTERNATIONAL *TRICHINELLA* REFERENCE CENTRE (ITRC)

The ITRC represents an important international resource in the effort to control this disease. The ITRC is the official reference laboratory of both the International Commission on Trichinellosis (since 1988) and the International Office of Epizootics (since 1992). The ITRC was created as a repository for *Trichinella* strains and as a source of materials and information for international research and it has been remarkably successful to this regard (Pozio et al, 1989).

THE ITRC TODAY

To date, about 900 isolates of human and animal origin from throughout the world have been examined and identified by new procedures developed at the ITRC or in collaboration with other institutions (Fig. 1). More than 200 isolates are preserved under liquid nitrogen in the *Trichinella* cryobank and more than 120 isolates are maintained *in vivo*. These data have been vital to the recent esta-

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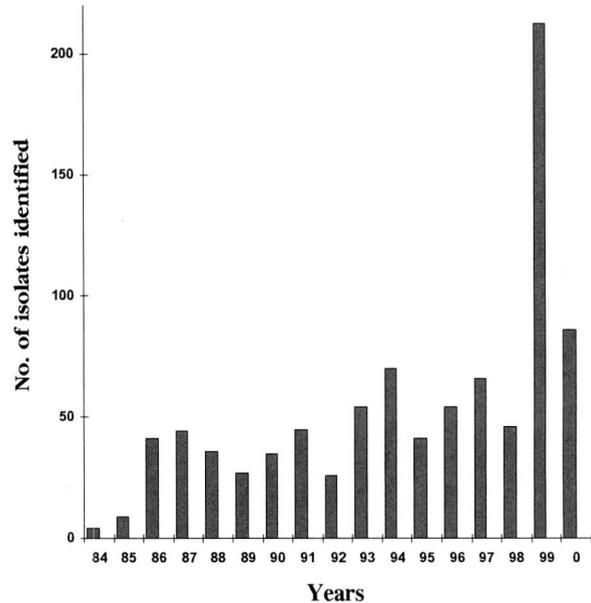


Fig. 1. – *Trichinella* isolates identified at the ITRC between 1984 and May 2000.

lishment of a new taxonomic system for *Trichinella*, which has had a great impact on the epidemiology and clinical management of this parasite (Table I).

Species	Geno- type	N° of isolates examined	Distribution
<i>T. spiralis</i>	T1	328	cosmopolitan
<i>T. nativa</i>	T2	177	arctic and subarctic regions
	T6	15	subarctic regions of North America
	T3	321	temperate areas of Europe and Asia
<i>T. britovi</i>	T8	3	South Africa and Namibia
	T9	2	Japan
	T4A	12	Palaearctic region
	T4B	1	Australia region
<i>T. pseudospiralis</i>	T4C	1	Nearctic region
	T5	22	temperate areas of North America
	T7	13	Africa south of the Sahara
<i>T. papuae</i>	T10	1	Papua New Guinea

Table I. – ITRC species and genotypes according to the most recent classification.

IITRC USERS

More than 150 researchers from 39 countries have relied on the IITRC to identify isolates, to receive reference strains, antigens, DNA, specific probes, PCR primers, epidemiological information, and sera from infected animals and humans and to preserve isolates in the cryo-bank.

THE IMPACT OF THE IITRC

The impact of the IITRC has been remarkable. Using material from this collection, the IITRC has provided a complete revision of the systematics of the genus *Trichinella*. This has greatly clarified many puzzling aspects of the clinical and epidemiological features of trichinellosis. Over 100 publications have stemmed directly from the IITRC and many other publications have relied heavily on isolates and data obtained from the IITRC. The IITRC has become very important to the zoonotic-disease community, not only in the research field but also in the control of this infection. The identification of parasites as domestic or sylvatic types has helped veterinarians to plan control programmes, to select the target animals that could be involved in this zoonosis, and to adopt the most useful techniques in the veterinary control of meat safety. The vast amount of data have allowed for the identification, in several countries of the European Union, of the *Trichinella*-free areas, of the regions where only the sylvatic cycle is present, and of the countries where both domestic and sylvatic cycles still occur.

IITRC STAFF

Year-round, two scientists and three technicians are actively involved in the collection of isolates, their identification, maintenance and cryopreservation under liquid nitrogen, DNA purification, antigen production, collection of human and animal sera, and the forwarding of reference material, in addition to other activities.

FORWARDING OF *TRICHINELLA* LARVAE

Before sending material, contact the IITRC by e-mail. Import authorisation is not required. Write on the package: "Biological material for scientific use only". For any questions, contact the IITRC by e-mail (pozio@iss.it).

Fresh material (infected mouse carcass, infected meat from the original host, human biopsy):

This material should be sent by courier as soon as possible. The material must be sealed within several plastic bags (one inside the other), or in a plastic vials, or vacuum packed, and placed in a polystyrene box or padded envelop. Human biopsies must be preserved in a plastic vial with sterile saline to avoid dehydration.

Frozen material (infected muscle samples, larvae in 0.5ml Eppendorf vials with H₂O, etc.):

Send the material packed in dry ice in a polystyrene box by courier.

Larvae in absolute ethyl alcohol:

After artificial digestion, collect only motile larvae, wash them in water 3-4 times and preserve in a small conical tube filled to the rim with absolute ethyl alcohol. Send larvae by courier.

HOW IITRC MEETS YOUR REQUEST FOR STRAINS

If import authorisation is required by your country, send a copy of the authorisation to the IITRC.

Reference strains *in vivo*:

An infected mouse carcass will be sent no longer than 40 days after receiving the request.

Reference strains under liquid nitrogen:

An infected mouse carcass will be sent not before 5-6 months the time needed to have enough larvae in mice.

IITRC IDENTIFICATION TESTS

Single larvae of *Trichinella* are identified by PCR RFLP analysis according to the protocol of Wu *et al.* (1999) and/or by multiplex-PCR according to a slightly modified version of the protocol of Zarlenga *et al.* (1999).

GEOGRAPHICAL REGIONS OF PARTICULAR INTEREST FOR TRICHINELLOSIS IN ANIMALS

In spite of the large number of isolates examined, there is still an urgent need to study *Trichinella* parasites from wildlife from the following areas: Central and South America, States of the west coast of the USA, Africa, South-East Asia and Oceania. However, it must be stressed that these sylvatic animals have to be collected far from human settlements. Indeed, sylvatic animals killed within or near the human environment can be infected with the cosmopolitan species *T. spiralis*. Furthermore, muscle samples should not be examined by a trichinelloscope, in that detecting *T. pseudospiralis* in muscle tissue is very difficult and the recent reports on the presence of this non-encapsulated species in wildlife and domestic animals suggest that this *Trichinella* species is more widespread than it was believed.

CONCLUSIONS

The identification of parasites as domestic or sylvatic types has helped veterinarians to plan control programmes, to select the target animals

that could be affected by this zoonosis, and to adopt the most useful techniques in the veterinary control of meat. The vast amount of data have allowed for the identification, in several countries of the European Union, of *Trichinella*-free areas, of regions where only the sylvatic cycle is present, and regions where both domestic and sylvatic cycles still occur. The ITRC database can be consulted by accessing the web-site: www.simi.iss.it/trichinella/index.htm.

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