

Mus musculus Endoparasitosis innovative Health Monitoring protocol in a conventional animal facility as a new component of a good laboratory practice

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The animal model is an important way to study many of the human diseases and it is irreplaceable with *in vitro* techniques.

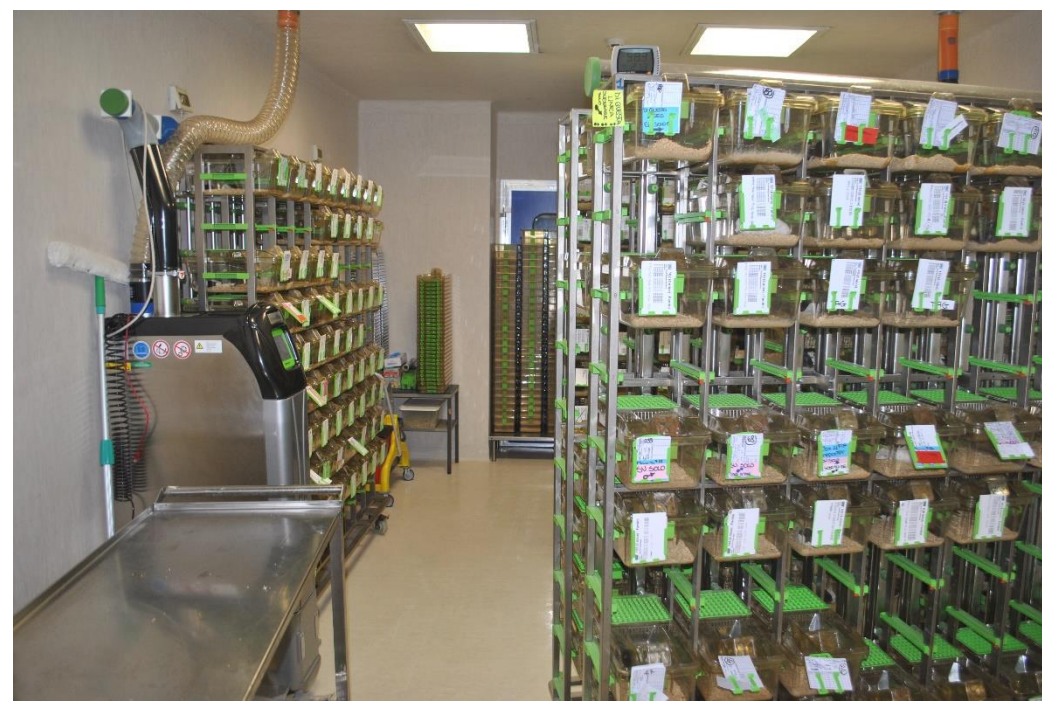
Thanks to the standardization of these animal models, in terms of genetic and biological knowledge, it is possible to maintain an uniformity of the experimental data, and guaranteeing their reproducibility. The animal Health Monitoring (HR) is important to supervise some biological characteristics, as environmental and genetic factors, because their interactions can influence the suitability of an animal in the experimental protocols.^{1,2}

From our preliminary data, although the HM includes almost all of the pathogens, still few measures are adopted in terms of control for the opportunistic agents. For example some infections, attributable to various species of protozoa, are often tolerated for a conventional sanitary state.

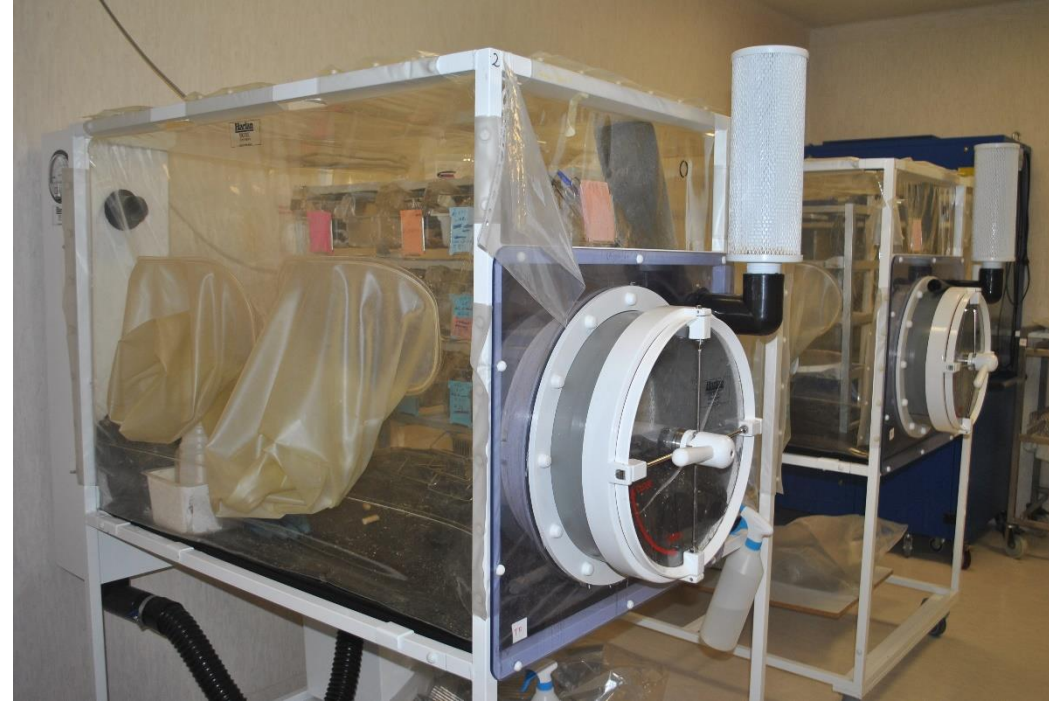
The aim of our work is to propose a new protocol for monitoring protozoal disease in laboratory rodents, through an innovative method (Mini-FLOTAC® kit) already used in human and in veterinary medicine for farm and pet animals.^{3,4}

The advantages of this procedure are multiple: the low costs, the diagnostic accuracy, the fast and easy of the execution and furthermore develop the principles of the 3Rs.^{5,6}

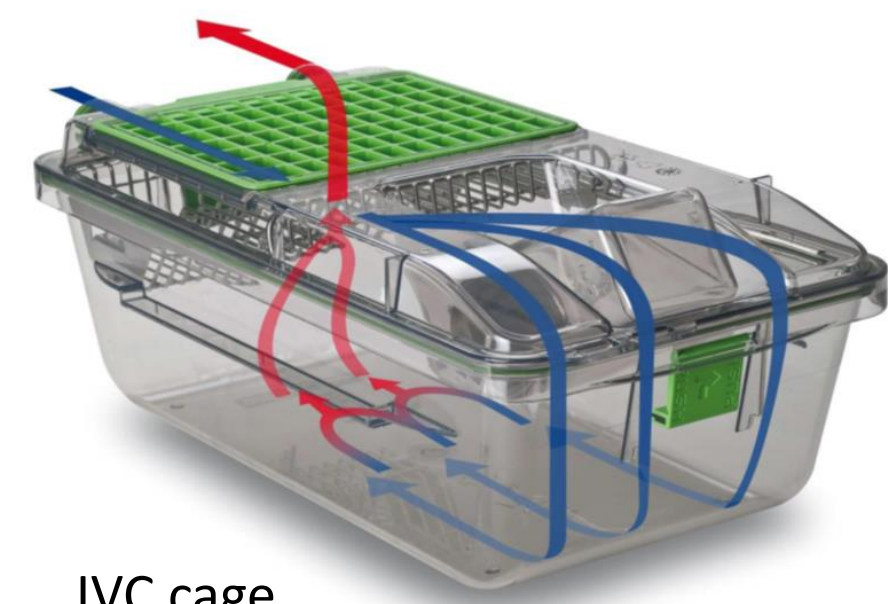
Our results shown that the examination of the cecal content, performed by direct microscopy, confirms the data obtained with Mini-FLOTAC® technique, even at low concentrations of oocysts.



Ventilated racks with IVC system

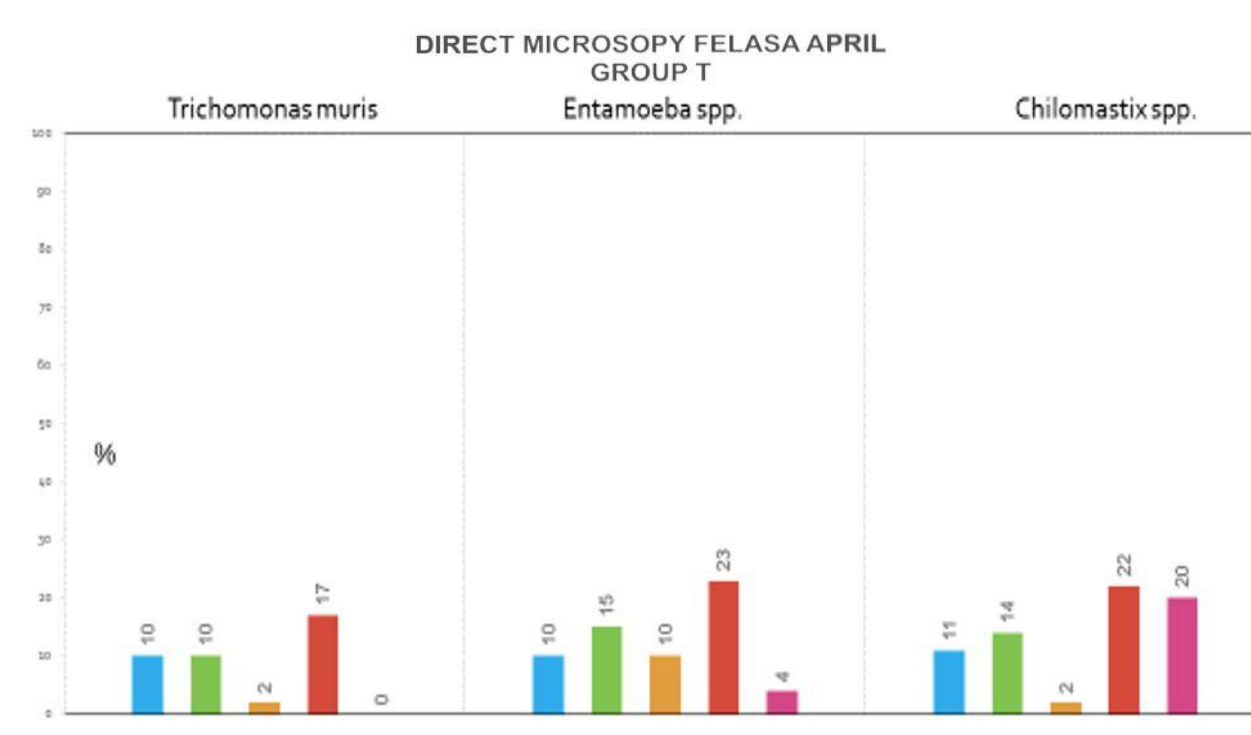
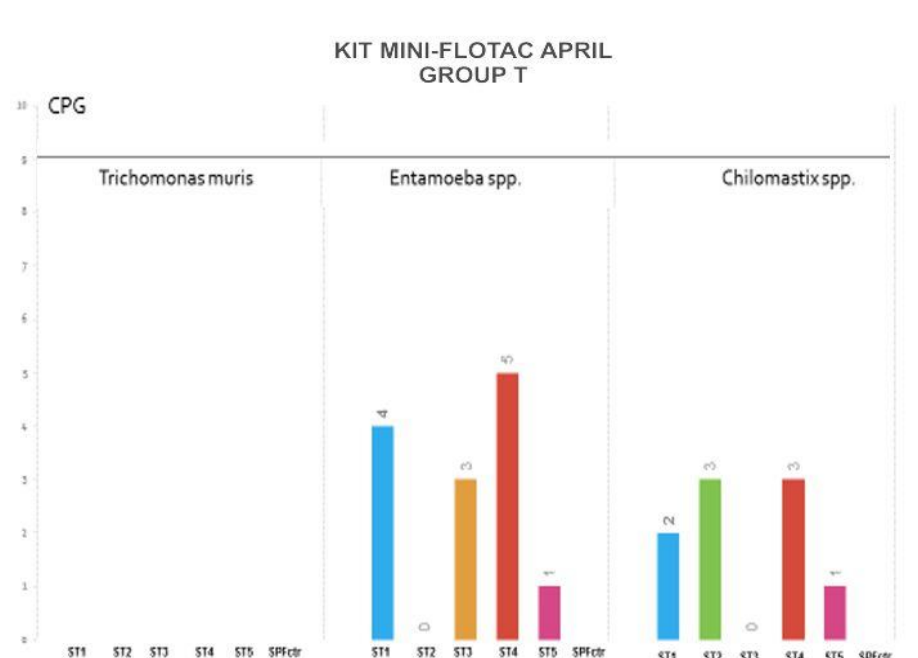
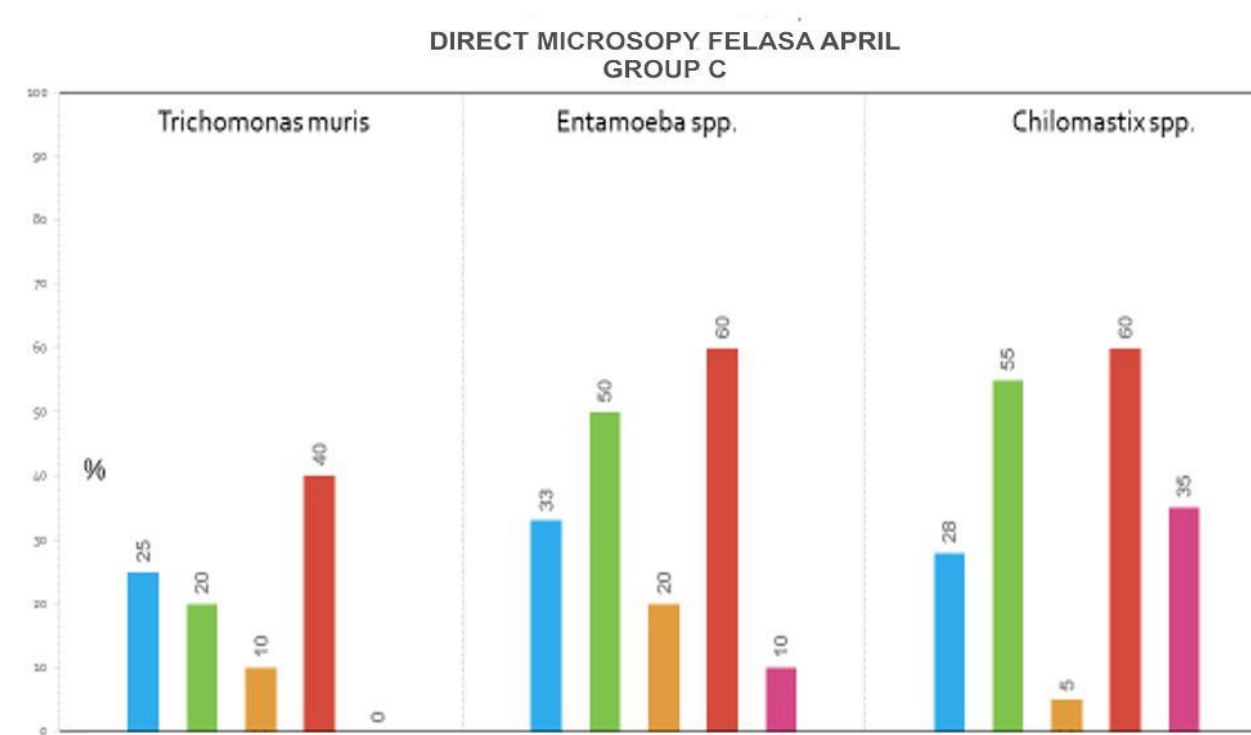
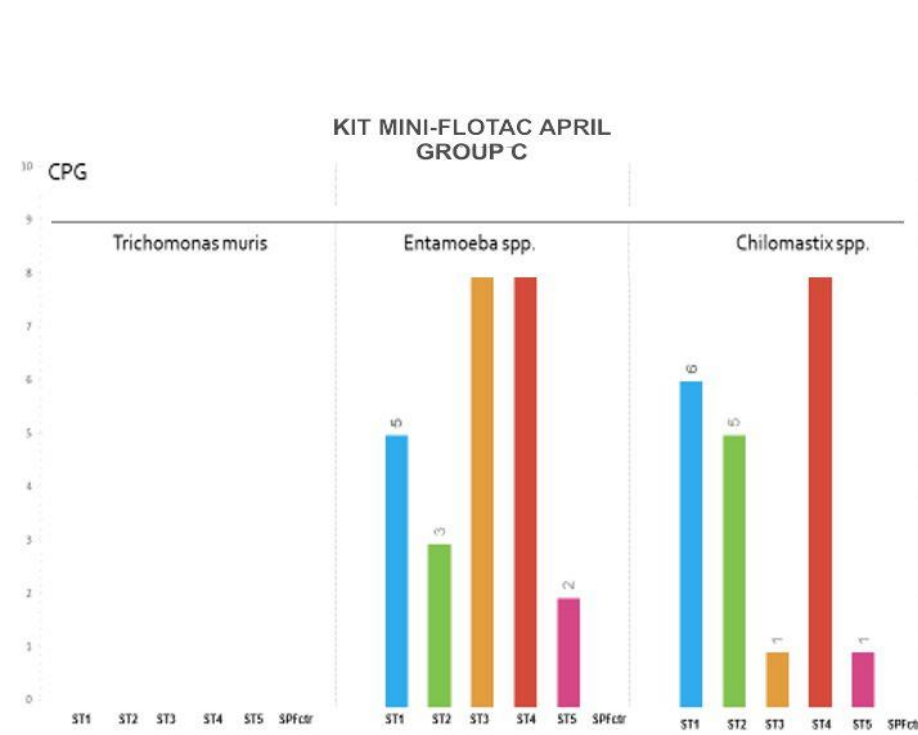


Isolators



IVC cage

Biocontainment systems in the conventional animal facility of Castel Romano



Preliminary results obtained in comparison with the Mini-FLOTAC® (right) and direct microscopy (left)

Aim of the work

- 1) Develop a new protocol to monitor endoparasites in laboratory rodents, through an innovative method (Mini-FLOTAC® kit)
- 2) Review the benefits associated to the improvement of sanitary and hygienic conditions through blood tests

Results

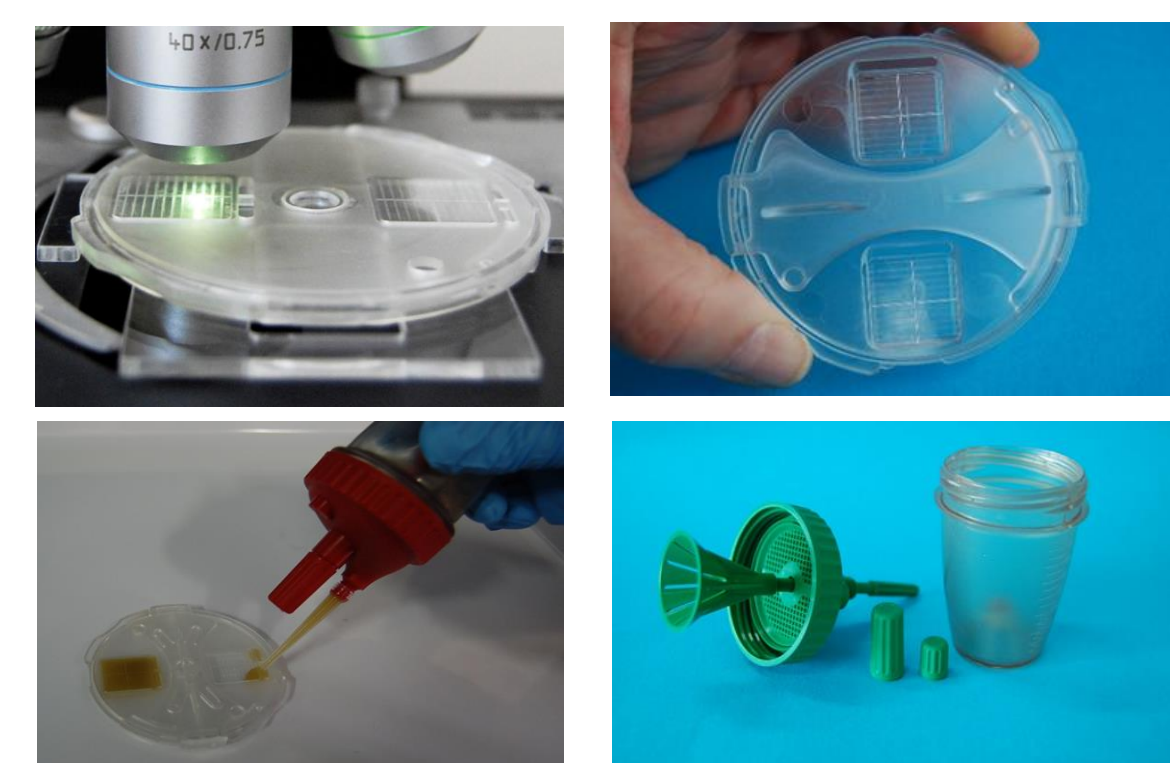
The results confirm the presence of protozoan infestations in the Facility conventional areas; although the prevalence and the distribution is different between the various rooms, to indicate an optimal state of biocontainment.

The examination of the cecal content, performed by direct microscopy, which is routinely performed for FELASA panel analyzes, confirms the data obtained with Mini-FLOTAC® technique.

The Mini-FLOTAC technique proved to be efficient even at low concentrations of oocysts, and the treatment with metronidazole reduced their prevalence of about 50%.

The blood tests showed no significant differences between the group of treated (group T) and the group of controls (group C), that confirm the low pathogenic nature of the protozoan infestation, this is the reason why they are normally tolerated in a conventional sanitary state

We hope that this new procedure can become a routine practice for the monitoring of parasites in conventional animal facility, reducing the number of animals used for regular FELASA panel analysis.



kit Mini-FLOTAC®



Internal analysis lab in Castel Romano

TEST	UNITS	GROUP C	GROUP T	Parameter	Reported Mean Values	Units	Group C Mean Values	Group T Mean Values
Creatinine	mg/dl	11,80	11,30	Packed cell volume	38,5 – 45,1	%	37	35,94
Glucose	mg/dl	199	120	Red blood cell number	5,0 – 9,5	10 ⁶ cells/mm ³	7,34	7,84
Cholesterol	mg/dl	65	67	Hb concentration	10,9 – 16,3	g/dl	12,41	11,98
Triglycerides	mg/dl	54	46	MCV	48,0 – 56,0	fL	47,24	52,10
Albumina	mg/dl	2,97	2,4	MCH	11,9 – 19,0	pg	15,74	15,87
Phosphorus	mg/dl	10,75	10,47	MCHC	25,9 – 35,1	g/dl	24,80	25,12
				Platelets	1084 – 1992	10 ³ platelets/μl	nv	nv
				White blood cells	3,0 – 14,2	10 ³ cells/μl	14,65	13,84
				Neutrophils	0,46 – 2,20	10 ³ cells/μl	0,55	0,59
				Eosinophils	0,00 – 0,38	10 ³ cells/μl	0,10	0
				Basophils	0,00 – 0,09	10 ³ cells/μl	0	0
				Lymphocytes	3,22 – 11,20	10 ³ cells/μl	9,80	8,66
				Monocytes	0,40 – 1,43	10 ³ cells/μl	0,50	0,76

Hematological and biochemical tests

Bibliografia

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