ENVIRONMENTAL PARAMETERS IN A DISPOSABLE IVC FOR ANIMALS TRANSPORT UNDER STATIC CONDITION OVER A PERIOD OF 72 HOURS.

Objective

It was objective of this study to monitor a number of environmental parameters over a period of 72 hours in a disposable Single Use Mouse Cage (IVC) designed for animal transport purposes when left in static condition on a bench .

Materials, methods and experimental design.

Cage. Single Use Mouse Cage, Tecniplast Spa Italy (501 cm^2), "mice transport configuration" equipped with a Reemay filter on the top.

Mice. Five mice, C57Bl/6N, females >27 g of body weight.

Diet Harlan Teklad Global Diet for rodents, breeding/maintenance

Water. RO Irradiated water.

Gas Detector. Drager X-am 7000, close-circuit. The air is sampled from the cage from the front side at a height of approx. 2,5 cm from the top of the bedding. The same air is then pushed back in the cage through an inlet valve on the top right of the cage. Analysis occur approx every 3-4 seconds and data are transmitted via an infrared port to a lap-top where the software (Drager Gas-Vision) is installed. Photo 1.

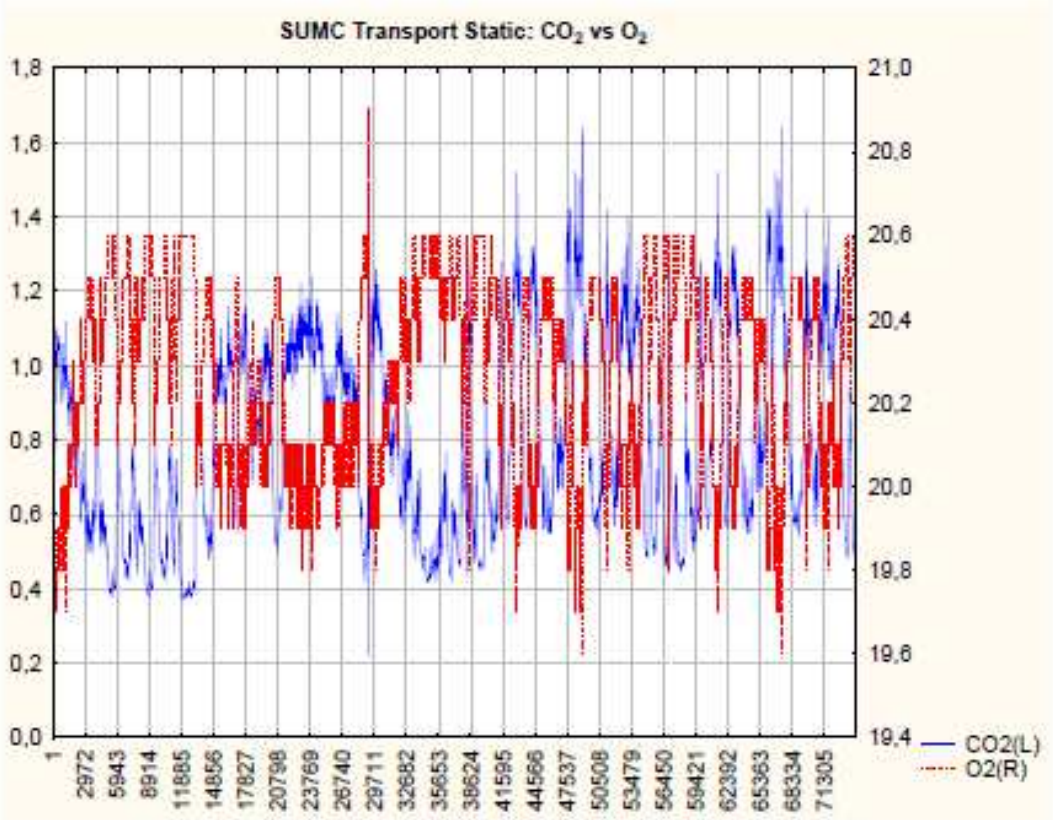
Photo 1

Results.
Gases

Table 1. Summarize the results in terms of CO_2, , O_2 modification during the 72 hours of the test,

72 HOURS Static: Cage SUMC Transport							
%CO_2	Valid N	Mean	Confidence -95%	Confidence +95%	Min.	Max.	St.dev
	74268	0.79	0.793	0.796	0.08	1.64	0.25
%O_2	Valid N	Mean	Confidence -95%	Confidence +95%	Min.	Max.	St.dev
	74268	20.27	20.276	20.279	19.6	20.9	0.22

Tab 1



Graph 1

Comments and Conclusions.

- All five mice survived the 72 hours test and no clinical signs of suffering were detected at the end of the study.
- The mean concentration of CO_2 registered by the instrument was 0.79 % close to the 0.5% accepted for cages under ventilation.
- The max. concentration of CO_2 registered by the instrument was 1.64 % well below the LD_{50} of 8.8% for this gas in mice.
- The highest concentrations of CO_2 were detected during the dark phase as expected with a logic, concomitant, negligible, not significant in physiological terms, decrease of oxygen content.
- The increase of CO_2 during the dark phase is due to the increased activity of mice under test confirming that their natural behaviour was not affected.
- Spots of moisture on the cage walls were detected due to the increased RH.
- Ammonia and CH_4 were never an issue during the 72 hours.

In general, the large Reemay Filter surface has worked as for the purpose it was designed, limiting the growth of CO_2 to an acceptable level and sufficient to guarantee the survival in good clinical condition of the mice.

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