

***THE CLINICUM LABIORATORIO AUTOMATIZADO FOR STUDIES
OF THE RESPIRATORY PHYSIOLOGY OF ANDEAN SMALL
MAMMALS***

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The Clinicum laboratory is a private facility that contains a clinical laboratory and a research laboratory for the study of Andean small mammals. It is located in Iquique, Chile, by the Pacific Ocean. The research laboratory is equipped with up to date facilities for the study of oxygen consumption and ventilation of four species: Chichilla lanigera, Chinchilla brevicaudata, guinea pig (*Cavia porcellus*) and the laboratory rat. The research aims at the selection of an animal model for the study of adaptation to high altitude in humans. The standard model for adaptation studies to high altitude is the laboratory rat. This animal is very intolerant to both hypoxia and cold. It is an international model for mechanistic physiology but is of limited value for high altitude adaptation physiology.

The laboratory has low barometric chambers that operate at 22 degrees and at 10 degrees centegrade. The plethismographic equipment operates in hypoxic gradients from 150 Torr down to 35 Torr at 22 degrees and at 5 degrees. The laboratory receives help from a large foundry owned by the director of the laboratory. This large industrial operation helps in the service, design and construction of diverse instruments. There is a dealer in Miami, Florida who facilitates the importation of equipment from the US. Because Iquique is a free port, the importation of equipment can be done quickly and free of import duties.

The protocols that are being used at present study the respiratory parameters in hypoxic and hypothermic gradients before and after acclimatization to hypoxia and to cold for periods of three weeks. The final protocol will expose the animals to both hypoxia and cold and compare the results with those obtained in sea level conditions.

Preliminary results shows that the guinea pig seems to be an ideal animal for studies of adaptation to high altitude. It has Andean origin, hemoglobin of high affinity, it is very resistant to hypoxia and cold and has remarkable uniform ventilation that allows the registration of good plethismographic records.

From Iquique national high altitude parks can be reached by automobile in a few hours drive on excellent roads. This allows the use of terrestrial and aquatic species for research with permission from the park authorities.

It is hoped that scientists interested in comparative high altitude physiology will visit the Clinicum laboratory using its facilities for collaborative studies.

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