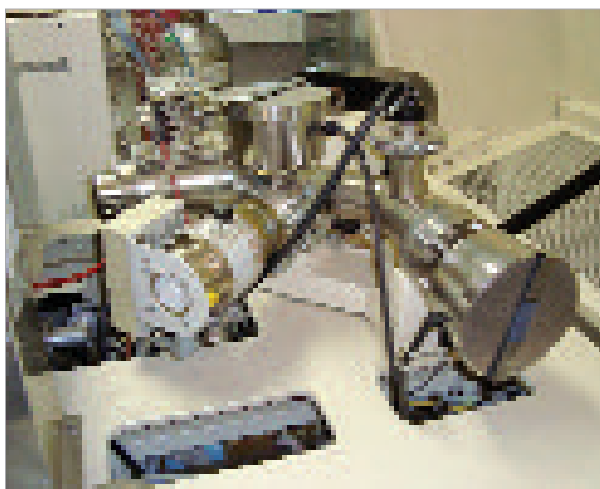


### ENVIRONMENTAL STABLE ISOTOPES IN ANIMAL SCIENCE

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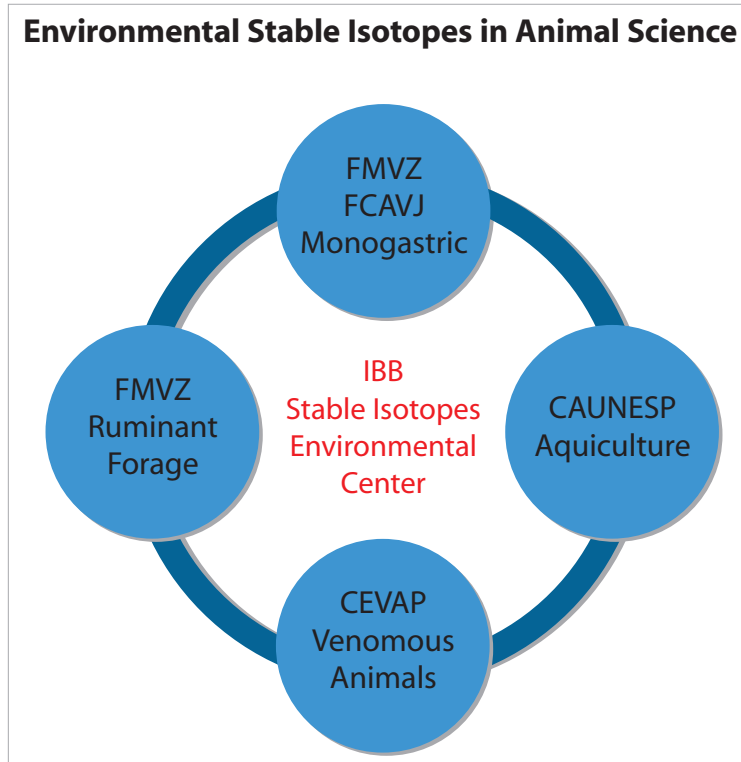


*Mass Spectrometer. Application of traceability by stable isotopes of bioelements in areas of ruminant, non-ruminant and aquaculture*

Traceability is the ability to find out food history, use or origin. It is fundamental for the concept of food safety, quality and animal welfare, to assure the food authenticity and food origin and final products (meat, milk, eggs), this allows the consumers to know and evaluate the food productive chain they consume, as the population expects more reliable information from products they purchase. Considering the meat production model, nearly 10% of the world meat production for human consumption is internationally commercialized, although there is a traceability program for production system through earings, registers and tattoos on the animals. This information is not given to the consumers. Nowadays, some markets do not accept the animal only with registers and programs. The traceability of the final product as a way to assure to the consumers the food safety and to protect the production of regions and countries is urgently due to safety questions. Analysis of stable isotopes of bioelements – Carbon, Hydrogen, Oxygen, Nitrogen and Sulfur – has been used to control food traceability for more than twenty years because it is non-radioactive and does not harm the environment. These bioelements are part of carbohydrates, proteins, lipids and nucleic acids structures being responsible for more than 90% of living tissues. The first products studies has included fruit, juice, honey, wine and alcohol, and for all of them, the official isotopic analysis method for detecting sugar or water addition, has been used since 1978 in the USA and 1995 in Europe. In Brazil, this technique started being used in Geochemistry, Hydrology and Agronomy areas due to the natural interaction between rock, soil, water and, consequently, the plants.

## SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

There is a proposal to establish an official methodology through stable isotopes to detect the addition of prohibited food in animal diet, such as the animal meals, initially in products for exportation. The addition of these protein sources is forbidden by the European Union and Islamic Countries which expect to buy only products from animals exclusively fed with vegetal food due to the mad cow disease. Brazil has an important role in the world agribusiness scenery, and the traceability of final products through stable isotopes can make the certification program of Brazilian products more competitive in the international market, assuring to the consumers the concept of food safety. Another approach of the project is to evaluate the technique of environmental stable isotopes in physiology, nutrition and animal metabolism, providing a new tool to improve the search for information and concepts in the Animal Science area. Thus based on the facts described above, the implementation in Brazil of a new area of traceability system application through stable isotopes of bioelements in areas of ruminant, non-ruminant and aquaculture, is relevant.




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