

## **Trace elements deficiencies in Belgian beef and dairy herds in 2000-2001**

**Guyot H.<sup>1</sup>, Lebreton P.<sup>2</sup> and Rollin F.<sup>1</sup>**

**<sup>1</sup>Department of Clinical Sciences, Large Animal Internal Medicine, Faculty of Veterinary Medicine, University of Liège, Belgium.**

**<sup>2</sup>IPA-Chassot, Tarare, France.**

The aim of this study was to evaluate the prevalence of trace element deficiencies in Belgian herds. It is well known that the soil of southern Belgium is deficient in copper, cobalt, iodine and selenium. Furthermore, feedstuff analyses confirm that hays and silages harvested in this region are deficient in selenium, copper and zinc.

We investigated 29 beef and 14 dairy herds in the South part of Belgium. All herds presented miscellaneous pathologies. In each herd, blood samples (lithium heparinate) from 5 to maximum 11 healthy cows were taken (n=321). Blood samples were analyzed for zinc, copper, RBCs' superoxide dismutase (SOD, a copper containing enzyme) and glutathion peroxidase (GSH-pxe, a selenium containing enzyme). A herd was declared deficient in one element, if at least 30 % of sampled animals were out of normal range for this element.

Beef herds were mainly represented by the Belgian Blue breed. In those 29 beef herds, neonatal diarrhea was a problem in 7 farms, respiratory diseases in 6, high mortality rates in 5, emaciation in 3, myopathy in 3 and lameness in 2 farms. Analyses revealed that 18 herds (62%) were deficient in zinc and that 22 herds (76%) presented copper deficiency. Based on plasma values, SOD and GSH-pxe were below normal range in 14 (48%), and in 21 (72%) farms, respectively. It appeared that 3 herds were deficient in only one trace element, while 24 herds showed multiple deficiencies.

Dairy herds were composed of Black and Red Holstein cows. Mastitis and high cell counts were observed in 4 farms, lameness in 3, hair and skin lesions in 3, reproduction troubles in 3, and emaciation in 2 farms. Based on plasma values, 11 herds (79%) were deficient in zinc and 11 in copper. Six herds (43%) had a decreased SOD activity and a decrease of GSH-pxe activity was present in 3 herds (21%). Four herds were deficient in one element, and 10 in more than one element.

Regarding these results, it can be concluded that widespread deficiencies in copper and zinc take place as much in beef as dairy Belgian herds. On the contrary, dairy herds present a better selenium status, probably because of a better protein supplementation rich in sulfur/selenium containing amino-acids. These deficiencies are clearly due to deficient feed-stuffs but can also be partly explained by the still increasing animals' needs (performances), not always taken into consideration by farmers.

Further studies are needed to demonstrate the impact of these deficiencies on herd health, production and reproduction by following the evolution after supplementation.