



RIKILT

WAGENINGEN UR

## **Detection of rbST abuse in cattle – Somatostatin assay development and implementation**

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Administration of recombinant bovine somatotropin (rbST) to increase milk yield is forbidden in the EU. But the use cannot be excluded, since the administration is permitted in the US for instance. Thus, there is a strong need for a fast and easy assay to identify illegally rbST-treated cattle.

Detection of rbST itself in serum is difficult due to the high similarity to endogenous bST and its short half-life in circulation. Therefore, we focus on the detection of rbST-regulated biomarkers in blood, such as markers of the IGF-1 axis, antibodies induced by rbST or markers of bone and soft tissue turnover. To be able to measure all these biomarkers at once, we use a multiplex-capable platform: a flow cytometric immunoassay (FCIA).

Thinking from an endocrinological point of view, we should not only focus on the response of target tissues (IGF-1 release from liver or protein synthesis in bone and connective tissue) but also on the feedback loops induced by bST (e.g. somatostatin, which is released in response to bST). Therefore, in this project, a FCIA for measuring somatostatin levels in bovine serum will be developed and combined into the already existing multiplex assay, which then will be able to detect 5 markers simultaneously. Finally, the newly developed method will be used to test serum samples of rbST-treated cows and somatostatin will be evaluated, whether it is a good indicative biomarker for rbST treatment.

### **Goal**

Development of a bovine somatostatin FCIA for measuring somatostatin levels in serum and combining it with a four-plex into a five-plex screening assay. The newly developed method will be implemented by testing sera of rbST-treated cows and evaluating somatostatin for its suitability as a candidate biomarker for detecting rbST treatment.

### **Minimum requirements**

Lab work experience, 6 months time

### **Opportunity**

You can do your master's project or an internship in a very well equipped institute in a nice working environment. Wageningen, as the "city of life sciences", is liked by many international students and therewith offers the best opportunities to gather experiences abroad.

### **Further reading**

Bremer *et al.*, Multiplex ready flow cytometric immunoassay for total insulin like growth factor 1 in serum of cattle, *Analyst*, 2010, 135, 1147–1152

***What we offer***

Expert guidance during the internship. Next to that a monthly internship compensation of € 295,--.