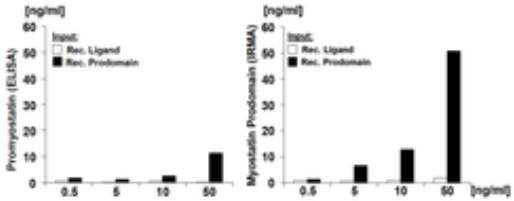
Technology Offer

Analysis of myostatin in serum

Reference Number 15-00356

Challenge

Myostatin is a member of the TGF-? family and a strong negative regulator of skeletal muscle growth. The precursor protein pre-promyostatin is converted to promyostatin and thereafter cleaved to myostatin ligand and myostatin prodomain. Ligand and prodomain are secreted by the cell and stay non-covalently associated in a latent complex that represents the most frequent form of myostatin in blood serum. After cleavage of the prodomain the myostatin ligand is released from the complex and target receptors are activated. Noteworthy, an induction of myostatin expression was observed in cachectic patients with pulmonary disease. Therefore, elevated myostatin expression is considered as an early sign of emerging cachexia in chronic diseases.



Commercially available myostatin assay (left) vs. new myostatin IRMA (right)

Technology

The newly developed technology comprises an impressively specific immunoradiometric sandwich assay (IRMA) for the detection of elevated myostatin serum levels in patients with pulmonary disease and chronic cachexia. In contrast to commercially available immunoassays which were particularly designed to determine the promyostatin levels, the new IRMA enables a highly accurate determination of serum myostatin due to detection of the myostatin prodomain. Thus, the new technology facilitates an early and reliable diagnosis of myostatin induced cachexia and ensures the timely therapy of patients at risk for muscle wasting.

Commercial Opportunity

In-licensing or collaboration for further development is possible.

Development Status

A comparative in vitro study with serum samples from healthy individuals (n=249) and chronic pulmonary disease patients (n=44) was performed.

Patent Situation

European patent (EP 2853898B1) has been granted with priority of 2013.

Further Reading

Breitbart A, Scharf GM, Duncker D, Widera C et al. 2013. Highly specific detection of myostatin prodomain by an immunoradiometric sandwich assay in serum of healthy individuals and patients. PLoS One. 8(11):e80454
Breitbart A, Auger-Messier M, Molkentin JD, Heineke J. 2011. Myostatin from the heart: local and systemic actions in cardiac failure and muscle wasting. Am J Physiol Heart Circ Physiol. 300(6):H1973-82.
Ju CR, Chen RC. 2011. Serum myostatin levels and skeletal muscle wasting in chronic obstructive pulmonary disease. Respir Med. 106:102-8.

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