Reviewer’s report

Title: Gene expression of sternohyoid and diaphragm muscles in type 2 diabetic rats

Version: 2 Date: 3 July 2013

Reviewer: Claudio Zoppi

Reviewer’s report:

AUTHORS COMMENTS:

General:

The present study performed by Lunteren and Moyer aimed to assess gene expression in respiratory and upper airways muscles in type 2 diabetes models. Using gene expression array as experimental design it brings huge amount of descriptive data. However, despite the elevated quantity of results, there is little novelty highlighted. In addition, gene expression data is discussed, in general, as functional proteins and mechanisms, which I consider not to be appropriated.

Therefore, to be suitable for publication I recommend the addition of functional data to this study. For instance, western blotting from the same, or the main proteins which genes were confirmed by PCR as well as metabolic intermediates or substrate oxidation measurement, muscle endurance, etc., would strengthen the paper contribution, and lead the discussion more adequate. A possible and more interesting alternative is to discuss gene expression based mainly on specific gene transcription factors alterations.

Minor Essential Revisions:

Methods section

1) First Paragraph; Line 6: “Lean (+/?) littermates (n=6)…”. It seems that the symbols have to be corrected.

Results Section

1) Page 8: End of the first paragraph: “On the other hand, for carbohydrate metabolism, gene expression was increased less than decreased.” If I am not wrong, carbohydrate metabolism gene expression was reduced and not increased. Please check this statement.

Major Compulsory Revisions:

The knowledge concerning diabetes-induced molecular alterations such as gene expression modulation is extremely important to detect candidates, as well as target genes for the development of therapy strategies.
However, skeletal muscle metabolic profile, functional and contractile alterations in type 2 diabetes are relatively well described. Although in the present study authors investigated respiratory muscles, most reported alterations seem to reflect what is already observed for classical hind limb skeletal muscle. Based on this, two questions arise.

1) Is it possible to discuss gene expression data with functional alterations as it is mainly done in the discussion?

2) Recent debate in literature is focusing the skeletal muscle transcriptional factors, nuclear receptors and co-activators that drive the shift in metabolism, contractile proteins and inflammatory response to obesity. For instance see the papers below.


Considering the array results, it would be more original to show these molecular mechanisms of gene expression control rather than describe functional alterations based in gene expression data.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.