Reviewer’s report

Title: REGULATION OF SOMATOSTATIN RECEPTOR 2 BY PROINFLAMMATORY, MICROBIAL AND OBESITY-RELATED SIGNALS IN PERIODONTAL CELLS AND TISSUES

Version: 0 Date: 28 Sep 2018

Reviewer: Sonja Sielker

Reviewer's report:

Title:

Regulation of somatostatin receptor 2 by proinflammatory, microbial and obesity-related signals in periodontal cells and tissues (HAFM-D-18-00049)

Summary:

In their study „ Regulation of somatostatin receptor 2 by proinflammatory, microbial and obesity-related signals in periodontal cells and tissues“, the authors examined expression of somatostatin receptor 2 (SSTR2) on gene and protein level in 4 primary human periodontal ligament (PDL) cell lines after adding IL-1ß, by ultra-sonication inactivated Fusobacterium nucleatum, and as obesity-related factors, leptin and visfatin. They observed a significant higher expression of SSTR2 compared to control and also dose dependent expression rate. In a second step, authors analysed gingival biopsies of periodontally healthy donors and periodontally-diseased patients. Here they also observed a higher expression rate of SSTR2 on gene and protein level. In an experimental periodontitis rat model, gene expression of SSTR2 was analysed. At four time points (6d - 8d - 12d - 20d) gene expression of SSTR2 was analysed in gingival tissue of rats with an artificial periodontitis compared to healthy rats. Authors found a significantly higher expression of SSTR2 after 12 days. Further gene expression of SSTR2 was analysed in rats fed with a high fat / high glucose diet compared to a control group. Authors found a significant higher expression of SSTR2 in the obese group. On the basis of this study, authors suggest that SSTR2 plays a critical role in the aetiopathogenesis of periodontitis.

The subject of this work is interesting and relevant for scientific community. However, some issues must be addressed by the authors so that the study matches the scientific accuracy for publication.
Methods and Materials

Culture and Treatment of cells / site 4 & 5:

IL-1ß, F. nucleatum, leptin, and visfatin were added to culturing media of PDL cells. How long was the incubation time with the added factors? In manuscript, only reference to previous studies was indicated. This straight information supports comparability with similar studies from other groups.

F. nucleatum was inactivated by ultra-sonication. Authors observed none or slightly effects in gene expression of SSTR2 with different amounts of F. nucleatum. How was guaranteed that no cells survived this treatment? Are there well-established information about concentration of pathogenic factors / cell debris of F.nucleatum and intense of immune response? Does the chosen concentration fit in it?

Results

Regulation of SSTR2 Protein Levels by Interleukin-1ß, F. nucleatum and adipokines / site 9 & figure 2:

It is difficult to interpret figure 2. In chosen presentation differences between groups and control are weak and red staining of SSTR2 positive cells seemed to be washed-out. Is it possible to make the presentation more distinct? Authors observed strong differences between concentration of added factors and gene expression of SSTR2. Given information of protein expression of SSTR2 disallow a transfer between results of gene and protein expression. Was there also a provable correlated increase in protein expression?

Regulation of SSTR2 in human and rat gingival biopsies/ site 9 & figure 3:

It seemed that SSTR2 is expressed in healthy tissue (figure 3b). Is this true or just interference of presentation? If yes, is it possible to calculate a basic expression level of SSTR2 in healthy tissue? If yes, does increased gene expression correlate with protein expression?

Authors observed an increased gene expression of SSTR2 in rats with a high fat / high glucose diet compared to rats with a normal diet. Was there also periodontal alteration observable in these rats? If yes, what kind and strength of alteration?

Discussion

Authors studied expression of SSTR2 and its critical role in aetiopathogenesis of periodontitis. For this, human periodontitis biopsies and gingiva biopsies from rat models were analysed and
compared. To identify stimulating factors, a cell culture model with PDL cells was chosen. Why not human gingiva fibroblast? Authors should comment this.

Site 10:

… Like in our experiments, the increased mRNA levels were paralleled at protein levels, as analyzed by immunocytochemistry… Given information of protein expression in this study are not quantifiable. A conclusion of this kind is with the given information not possible.

Level of interest
Please indicate how interesting you found the manuscript:

An article of importance in its field

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons
CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal