Salivary proteome of patients with dry mouth syndrome- a pilot study evaluating the effect of pilocarpine

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SALIVA

- **Biological fluid with an important role in health, oral digestion and oral food perception, with an additional potential interest as a source of biomarkers.**
- **Fluid responsible for oral lubrification;**
- **Relationship between food taste, trigeminal sensations and salivary proteome.**

XEROSTOMIA

- **Limited/reduced saliva production (unstimulated flow rate ≤ 0,1 mL/min & stimulated flow rate ≤ 0,7 mL/min)**
- **Even in the absence of real xerostomia, some individuals have a perception of dry mouth (Dry Mouth syndrome - DMS)**
- **Despite some known causes, this pathology remains to be fully understood and the contribution of salivary proteome to the symptoms are hypothesized**

WHAT IS KNOWN ABOUT THE RELATIONSHIP BETWEEN XEROSTOMIA AND SALIVARY PROTEOME?

- **In dry mouth syndrome (Sjogren's origin) : Protein rich prolin, statherins, histatins, prolactin induced protein, carbonic anhydrase VI, Alpha amylase, albumin and cystatins ↓ and Immunoglobullin K ↑**
- **In burning mouth syndrome: alpha-amylase, albumin, cystatins and immunoglobulin chains ↓**

OBJECTIVE

To assess the changes in salivary proteome induced by the treatment of xerostomia using pilocarpine

METHODS

Patients DMS (N=15)

1ST Appointment

After ≥ 2 months of pilocarpine treatment (*Salagen* ® 5mg/day)

Sub-sample acute stimulate with pilocarpine (N=5)

Collect before and after acute stimulation

Saliva collection through passive droll method

Sialometry

Total protein quantification (Bradford method)

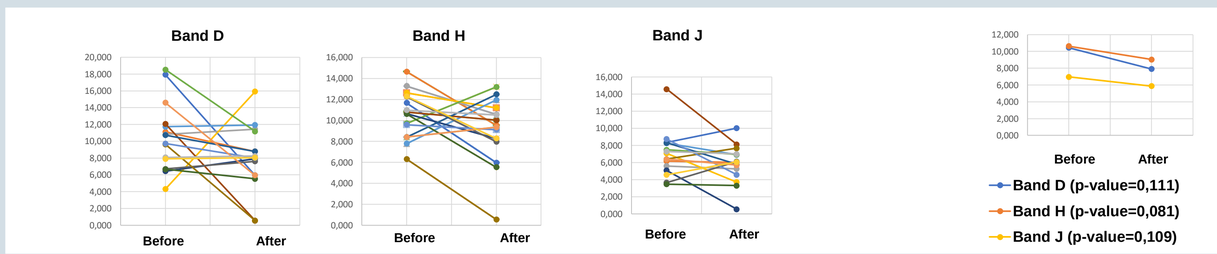
Gel based-proteomics

14% polyacryamide mini-gels

Statistic analysis (SPSS)

RESULTS

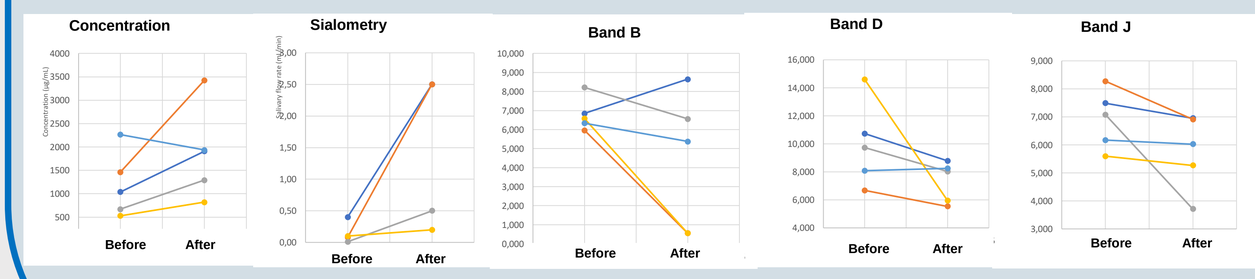
Comparison between the period before and after > 2 months pilocarpine treatment (samples collected with or without acute pilocarpine stimulation)



PRP's??? | **Immunoglobulin chains** | **Cystatins type S**

Sub-sample with controlled collection procedures (before and after pilocarpine stimulation)

Comparison between the period before and after > 2 months pilocarpine treatment (only samples collected with acute pilocarpine stimulation)



Polymeric immunoglobulin receptor | **PRP's???** | **Cystatins type S**

DISCUSSION

- ✓ Samples collection → with or without acute stimulation & were not centrifuged (not lose any protein → induces variability in the data
- ✓ **Cystatins:**
  - ✓ Mostly produced by submandibular glands (SMG) → treatment may decrease the SMG contribution to all saliva
- ✓ **Immunoglobulins:**
  - ✓ Decreases may be due to the increases in saliva flow rate as confirmed by sialometry results.
- ✓ **PRP's**
  - ✓ Produced by parotid glands, so it was expected increases, rather than decreases. Need of further studies to clarify their role in dry mouth.

CONCLUSION

- ❖ Saliva of patients with dry mouth syndrome visually appears denser than saliva of patients control.
- ❖ Pilocarpine treatment, with the consequent improvement of symptoms, tends to change salivary protein profile.

FUTURE WORK

- ➢ To improve controlled collection conditions, to avoid variability and to increase the number of participants;
- ➢ To use other proteomics techniques (LC-MS/MS & 2DE) to deep investigate the differences in salivary metabolome and proteome of dry mouth patients and treatment effects;
- ➢ To relate the changes in salivary proteome to different patients' symptoms and to food choice and taste sensitivity.

This work was supported by the FCT–Portuguese Science Foundation, through UID/AGR/00115/2019 and research contract CEECIND/04397/2017 to Elsa Lamy.

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