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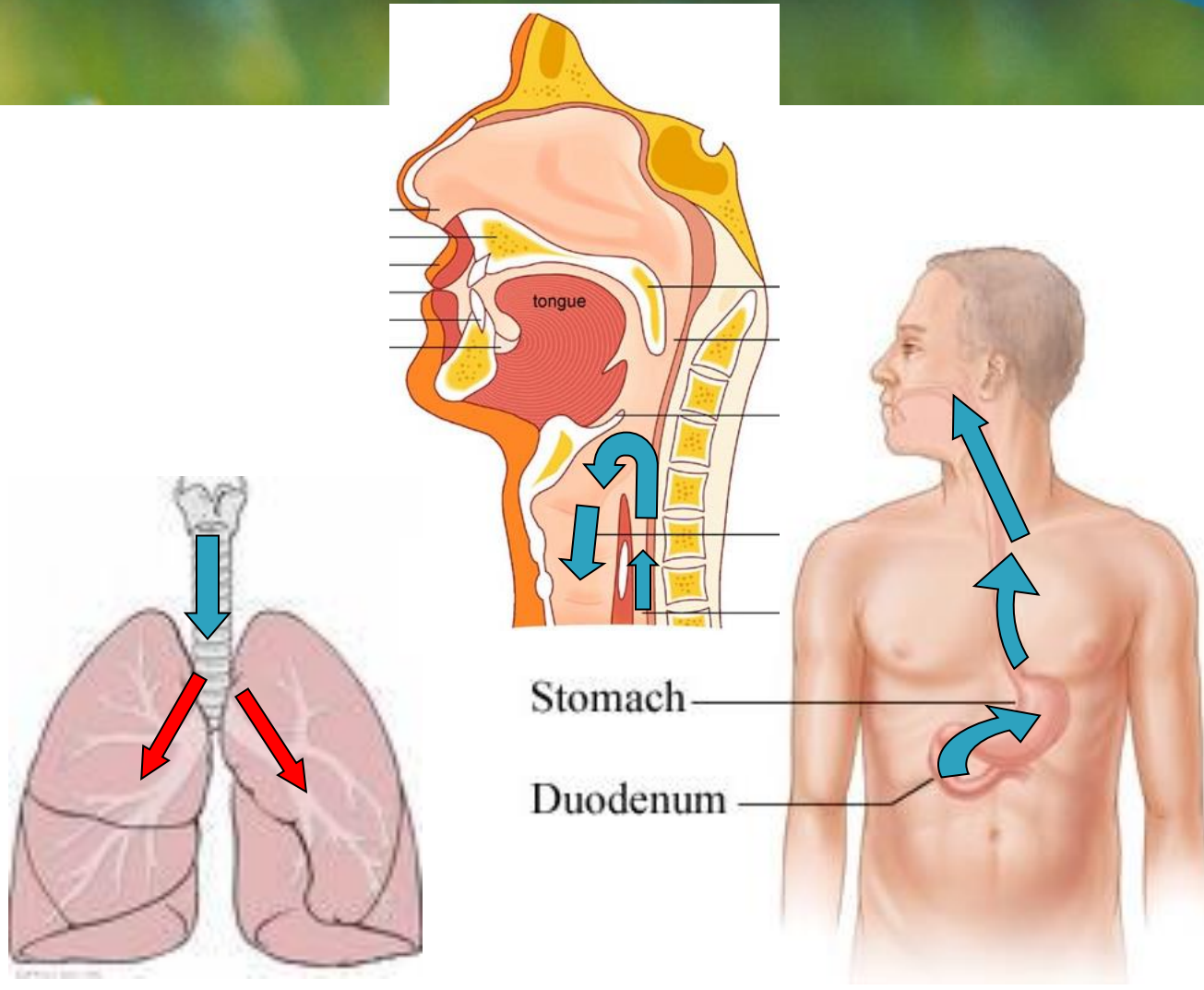
Dietary intake, physical activity and posture effects on non-invasive measures of reflux

Dr. Iain Brownlee

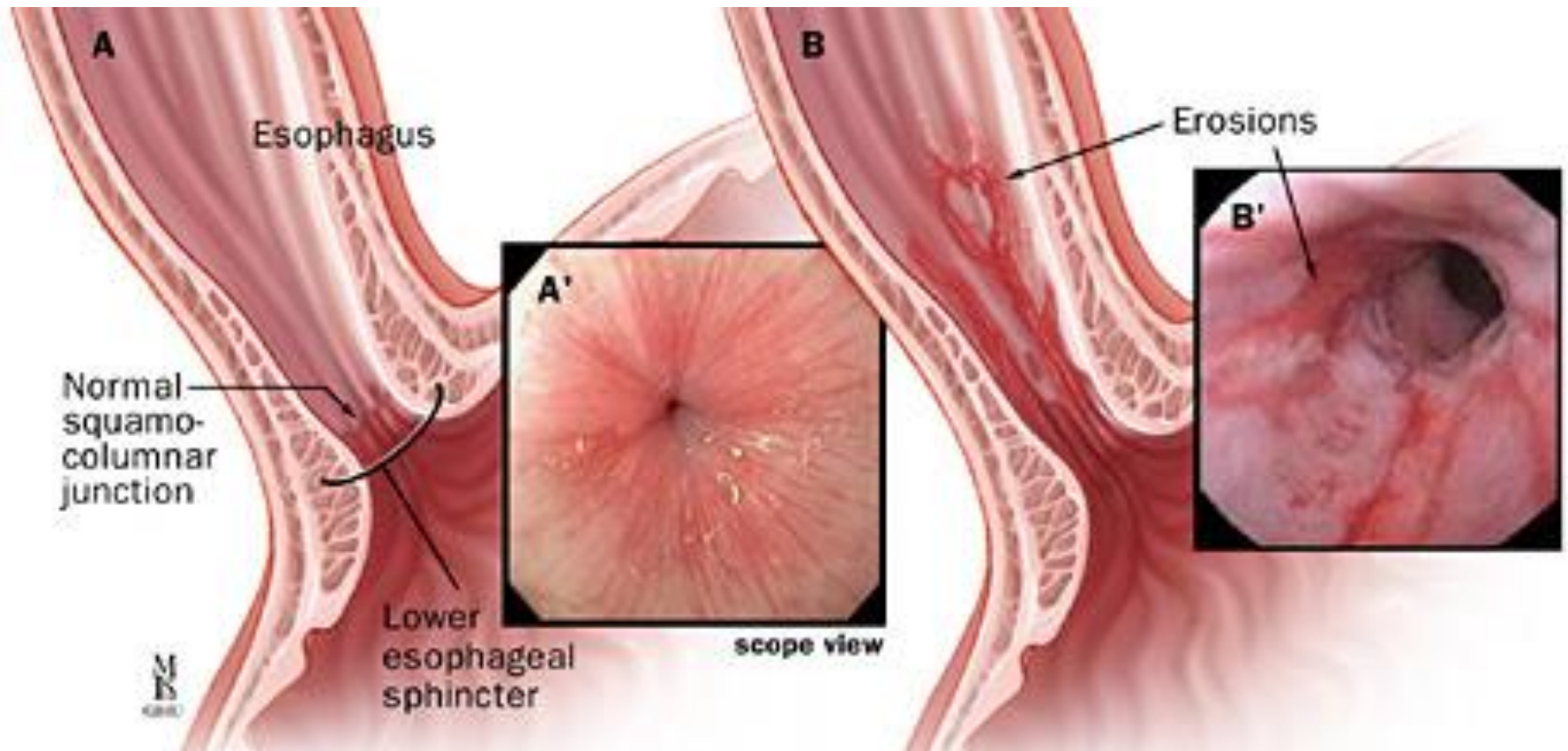
iain.brownlee@ncl.ac.uk

Background

Gastric reflux



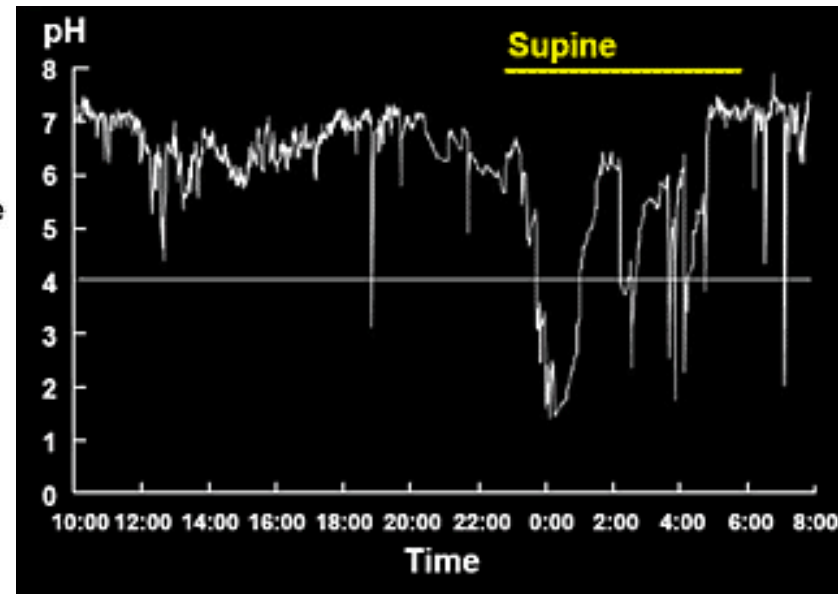
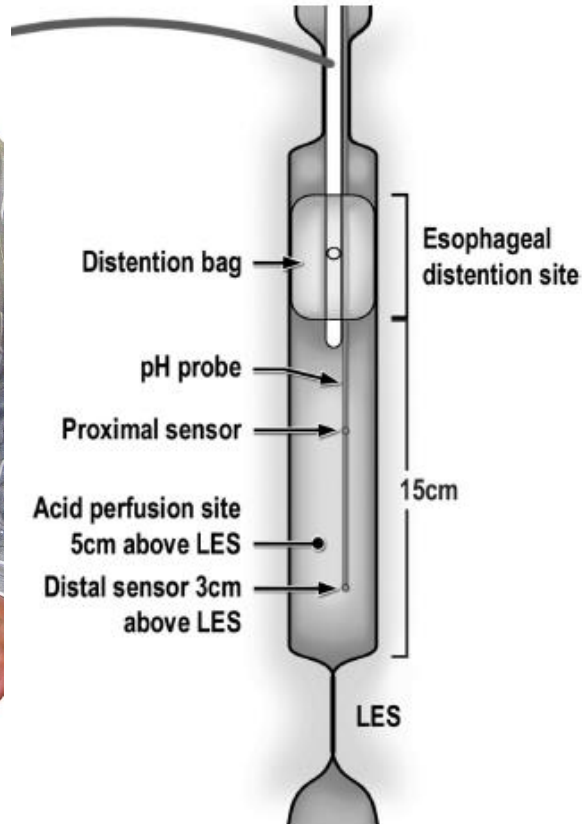
Erosive oesophagitis



"Silent" reflux

- ▶ = Clinically silent
 - No pain in oesophagus
 - No oesophageal presentation
- ▶ Reflux can reach other areas from the oesophagus (extra-oesophageal reflux)
- ▶ Gastric juice most likely to damage:
 - unprotected areas
 - areas where it stays

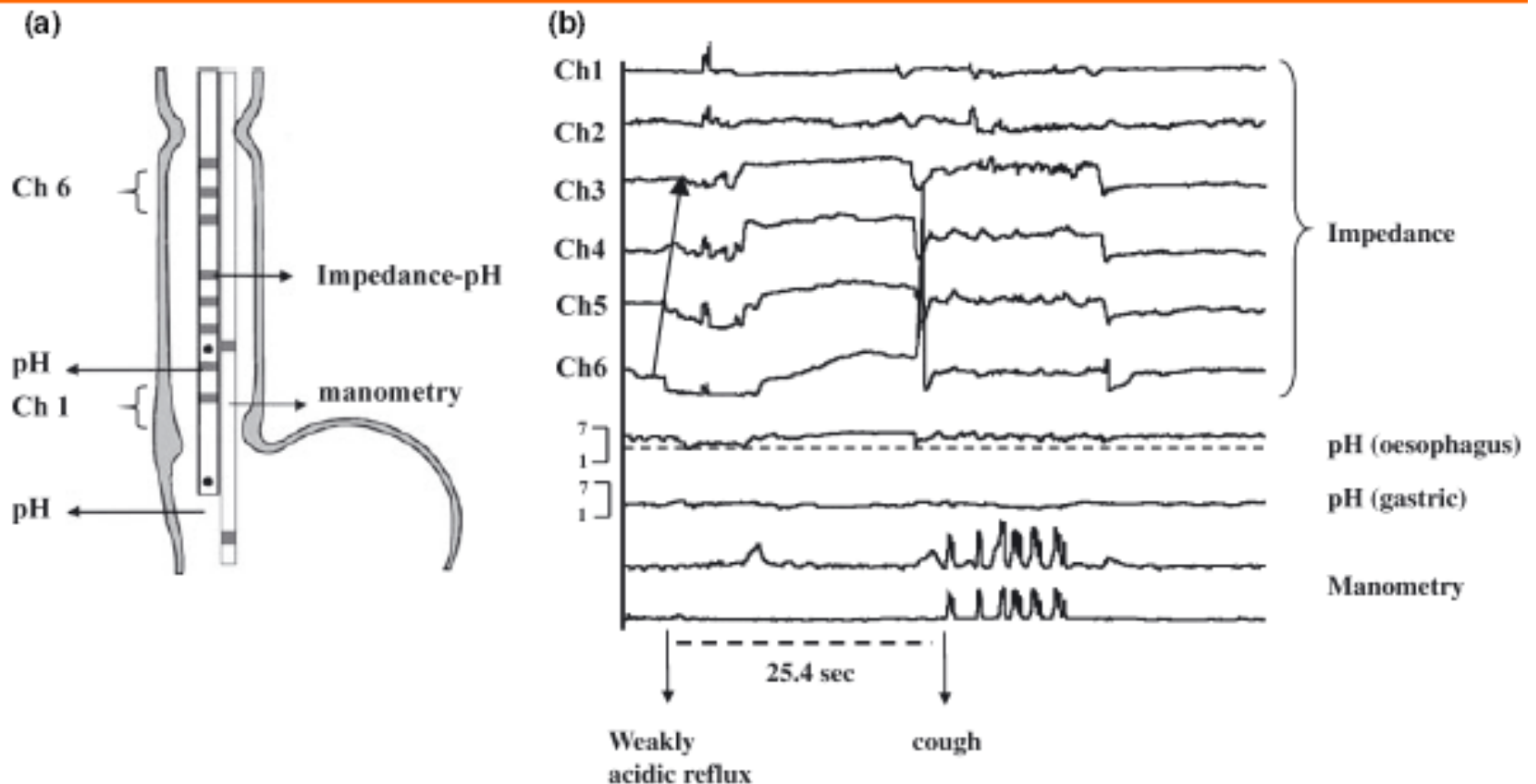
Reflux measurement



Reflux measurement

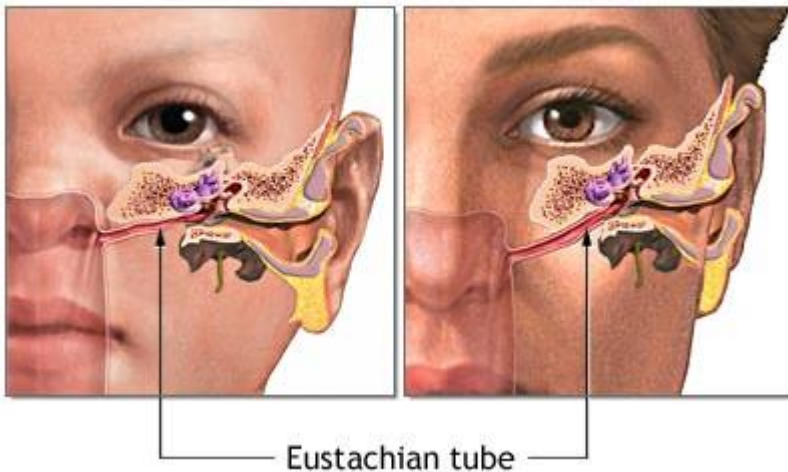
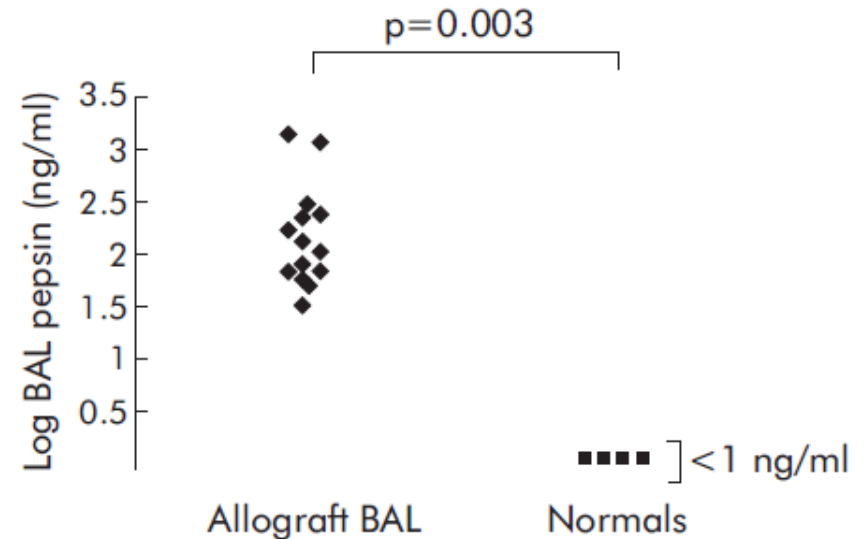
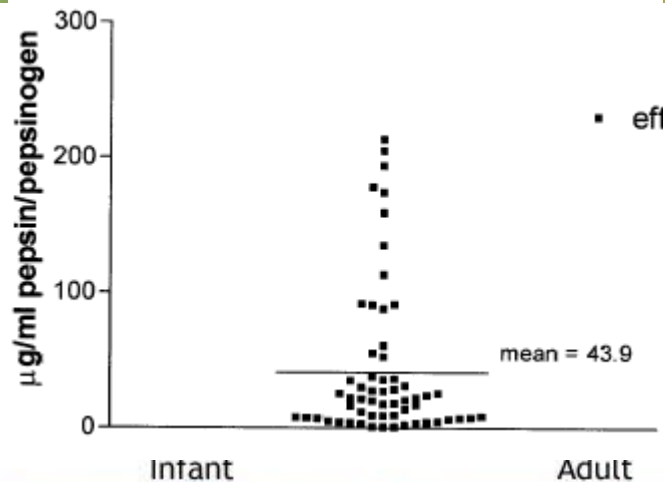
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Reflux measurement



Reflux treatment

1

- Lifestyle

2

- Pharmacological

3

- Surgical

Lifestyle factors

- ▶ **Dietary intake**
 - Spicy foods?
 - Acidic foods?
 - Fatty foods?
 - Alcohol?
- ▶ **Sleep**
 - Sleep on left hand side
 - Put bricks under your bed
- ▶ **Physical activity**
 - Reduced and moderate intensity?

Koufman JA (2010) Annals of Otology. Rhinology & Laryngology **120**

Study design

Aims

- ▶ Test saliva samples for the presence of pepsin in healthy individuals in relation to:
 - Dietary intake
 - Physical activity
 - Posture (before and after sleep)

Saliva sampling

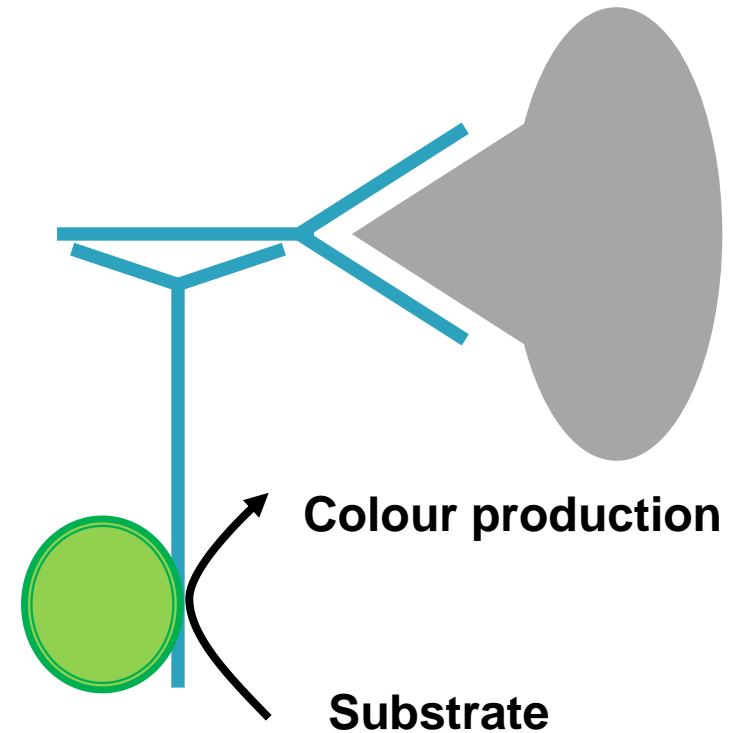
- ▶ Collect over 7 days before & after
 - Meals
 - Physical activity
 - Sleep
- ▶ Samples collected in 30 ml screwtop tubes
 - Citrate as preservative
 - Ziplock bags to seal
- ▶ c.1 ml of saliva collected



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Sample handling and analysis

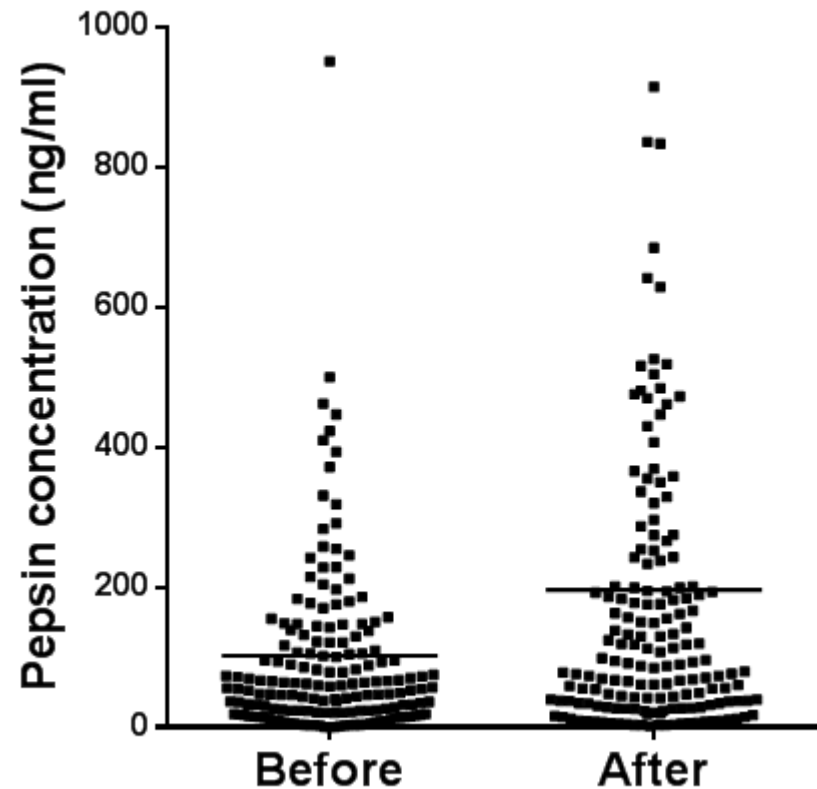
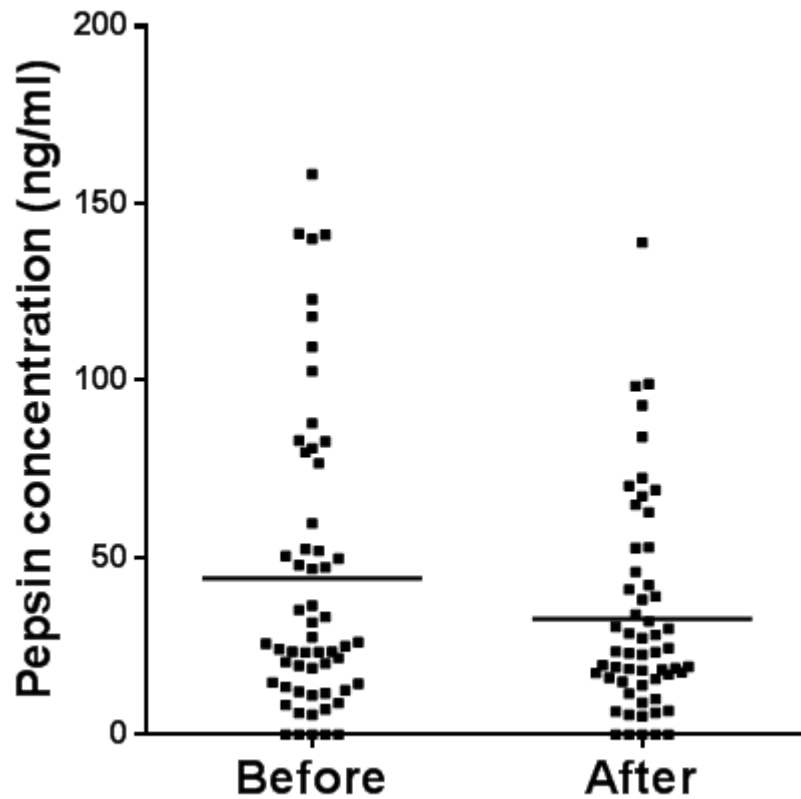
- ▶ Sample centrifuged
 - Remove cellular debris
 - Remove particulate matter
- ▶ Supernatant tested for pepsin
 - Indirect ELISA
 - 96-well plates



Major findings and discussion

Meal intake

Sleep



Summary

- ▶ $[\text{pepsin}]_{\text{saliva}}$ was significantly higher pre-meal than post-meal ($P = 0.037$)
 - Possible effect of cephalic phase of digestion?
- ▶ $[\text{pepsin}]_{\text{saliva}}$ occur was significantly higher post-sleep than pre-sleep ($P < 0.001$)
 - Recumbant posture likely to drive reflux events
 - Consideration of reduced saliva production also necessary
- ▶ No impact of physical activity bouts on $[\text{pepsin}]_{\text{saliva}}$
 - Low physical activity intensity noted in participants

Interpretation

- ▶ Detectable [pepsin]_{saliva} occur frequently at sampling times assessed here
- ▶ Diet, physical activity and posture are all likely to affect circadian reflux occurrence
- ▶ Consideration of “abnormal” measures not possible from current findings
- ▶ Further “challenge” studies warranted