

MINERAL CONTENT IN SALIVA AND ITS RELATION TO OVULATION CYCLE

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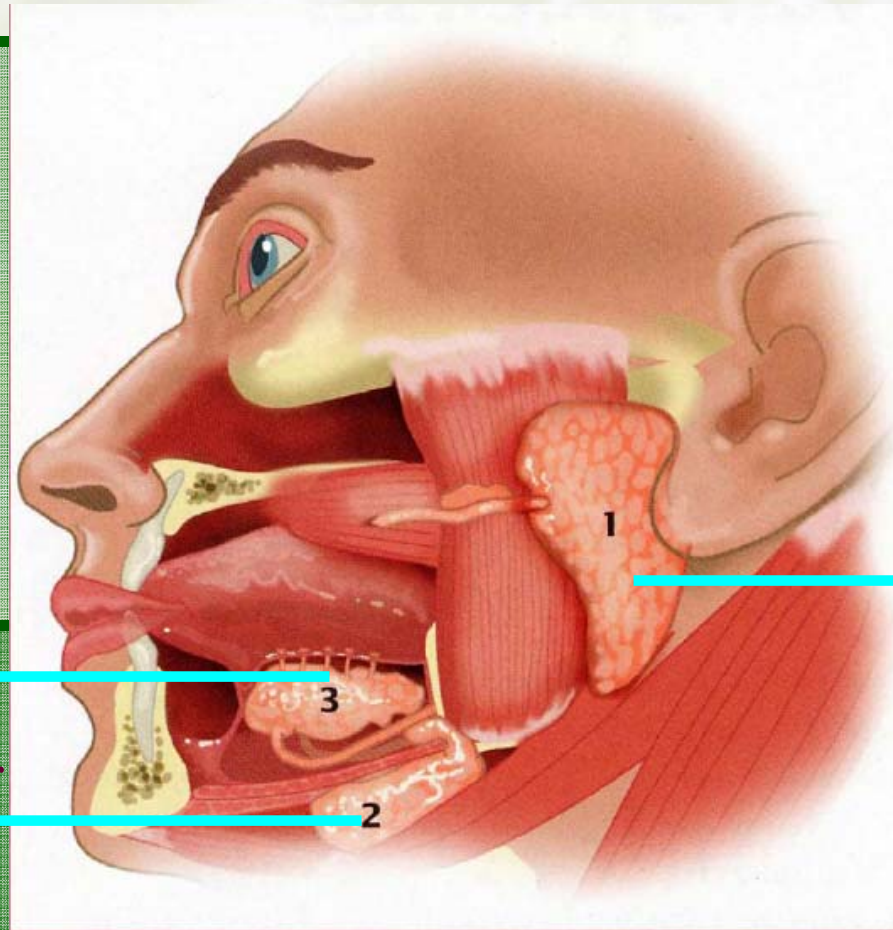
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Saliva,

- **biological fluid** secreted in abundant quantity
- fluid containing **mineral salts** with various concentration
- can **reflect** the free blood concentration

Salivary Glands (source and function)

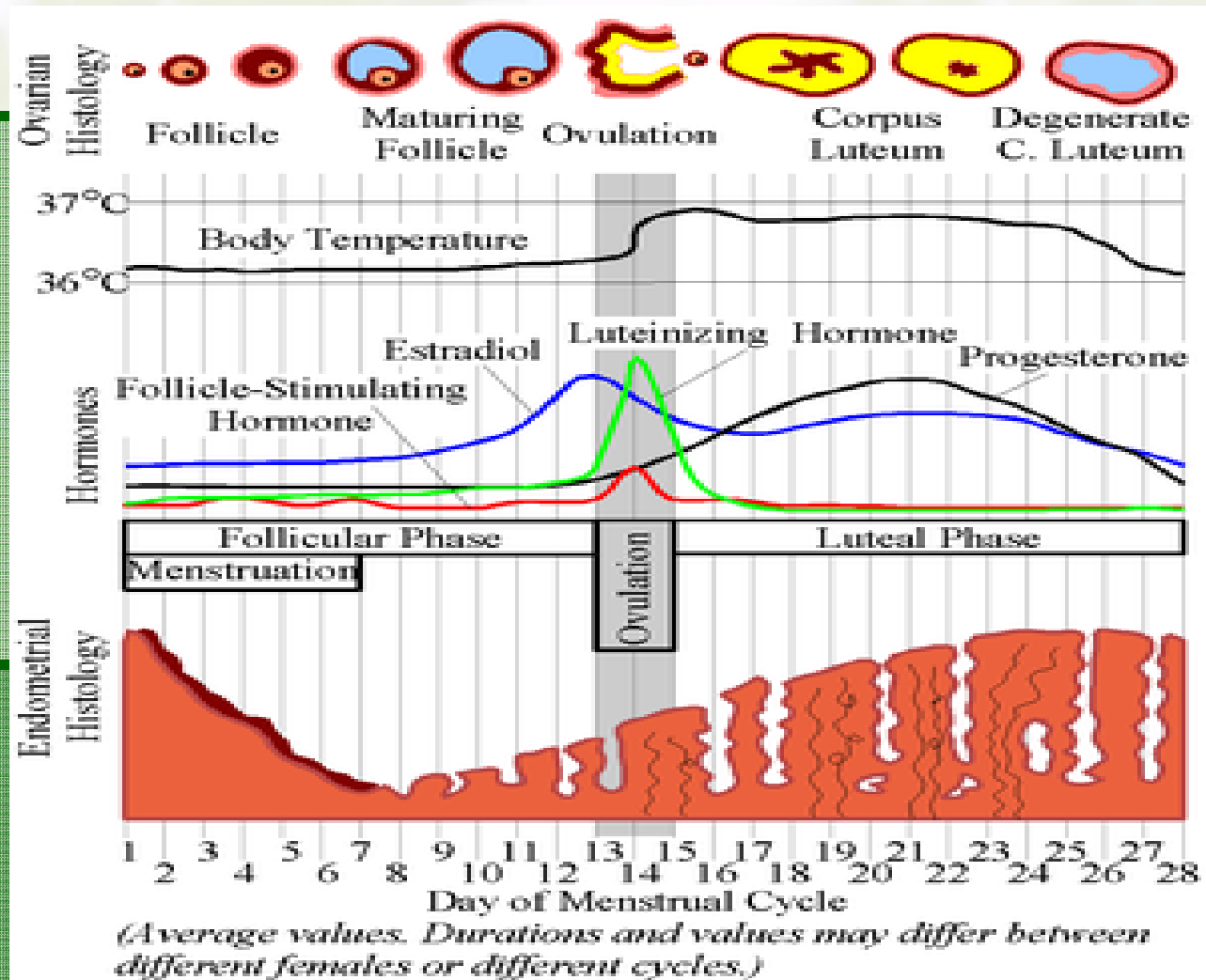


Sublingual
glands

Submandibular
glands

Parotid
glands

Ovulation,



Correlation Between Saliva And Ovulation

From previous study, at **OVULATION**

- ❑ De Marchi WG (1976) found
 - ❑ the lowest sodium (Na)
 - ❑ the highest potassium (K)
- ❑ saliva peroxidase activity increased significantly (Jorma Tenovuo *et al.*, 2004).
- ❑ ferning or crystallization caused by NaCl happen (Fernando RS *et al.*, 1988).

However...

- ❑ no discernible fertility pattern with the salivary
- ❑ non reliable marker of ovulation
- ❑ none theoretical basis of salivary ferning.

CONSEQUENTLY...

The objectives of this research:

- ❑ to investigate the mineral contents in saliva during ovulation
- ❑ identify the correlation with the fertile period
- ❑ to improve the previous research

This research is conducted..

- to **prove** that potassium concentration is the highest during ovulation.
- to **discover** the correlation between the electrolytes concentration in saliva during ovulation.

WHY SALIVA?

BLOOD	SALIVA	URINE
Stressful characteristics	Non Stressful characteristics	Non Stressful characteristics
Hard, cannot be done anywhere, any time	Easy, safe, can be done anywhere, any time	Hard, cannot be done anywhere, any time
Higher cost (specific apparatus)	lower cost (not specific apparatus)	lower cost (not specific apparatus)
subject cannot do it herself	subject can do it herself	subject can do it herself

SCOPE..

- ❑ focusing on 18 electrolytes in saliva
 - ❑ two participants samples that are tested to compare the results
 - ❑ for two cycles starting from the first day of the period

Parameter measured

☐ Mean concentration of electrolytes in saliva in unit ppm

By USING

☐ Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

Generally..

Design of experiment

- Use saliva to be tested

Experimental work

- Sampling process from 2 participants
 - Using ICP-MS

Data analysis

- Observe any changes in electrolytes mean concentration

Apparatus

- ❑ Sampling bottle
- ❑ Salivette
- ❑ Pipette
- ❑ Ultra pure water
- ❑ Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

Experimental Procedure

Sample was taken from 2 participants with normal menstrual cycle

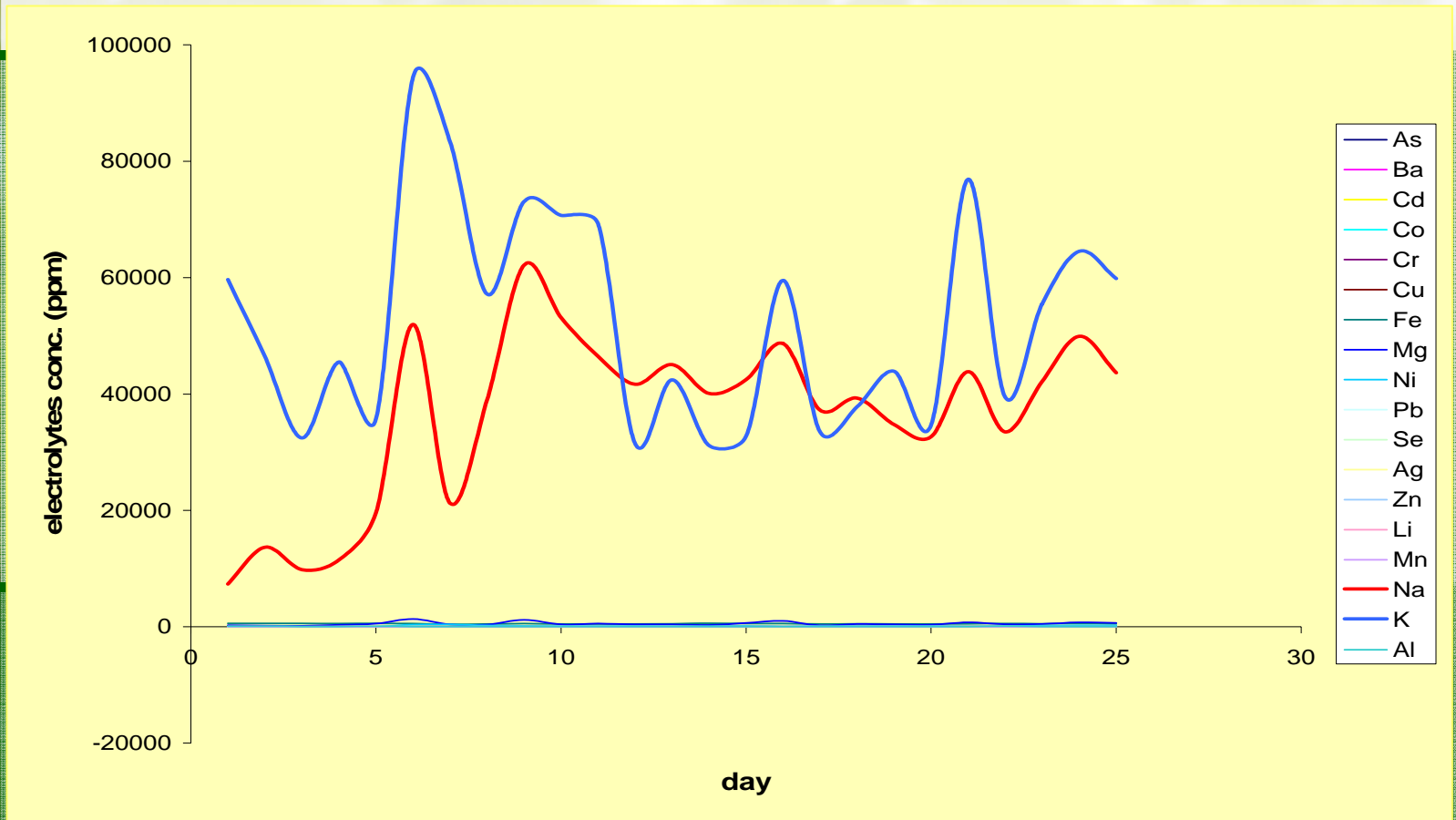
The sample was diluted 1:100 (v/v) in salivette

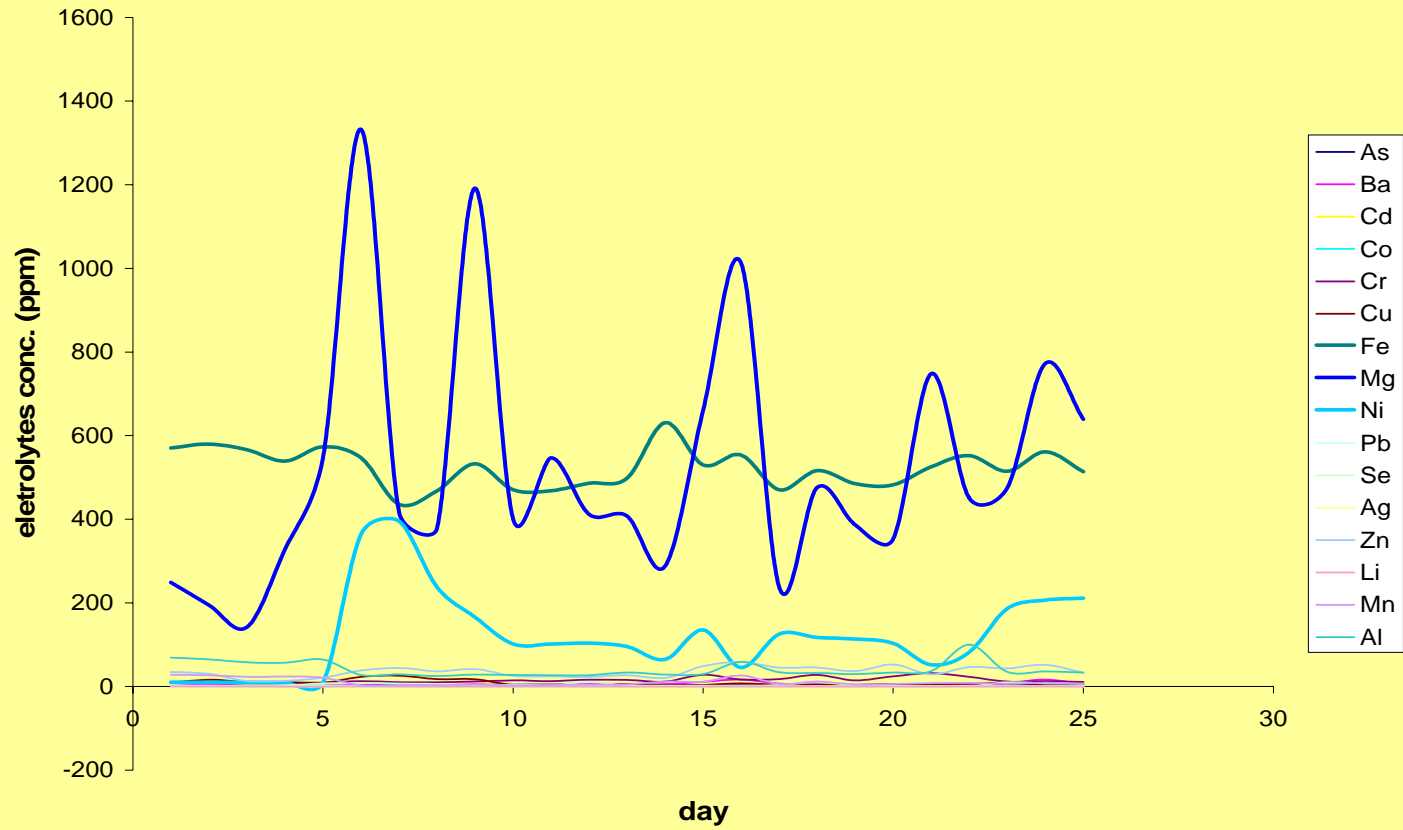
Run ICP-MS test and analyze the result's data

ALL ICP-MS RESULTS

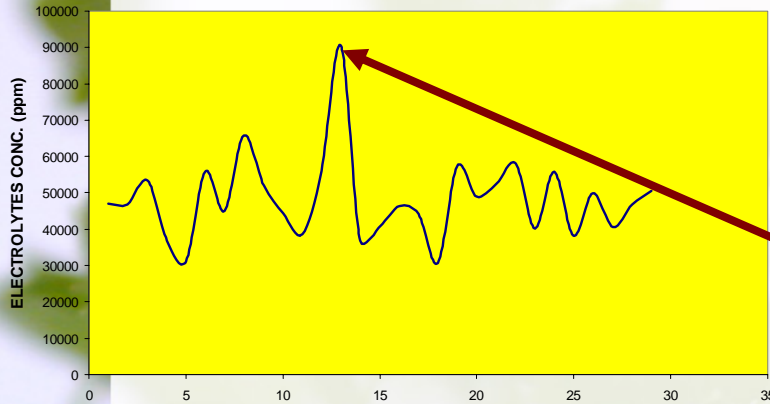
- **Participant A (1ST CYCLE)**
- **Participant A (2nd CYCLE)**
- Participant B (1ST CYCLE)
- Participant B (2nd CYCLE)
- The Comparison of Potassium (K) Concentration between 4 Cycles

The 1st Menstrual Cycle of Participant B

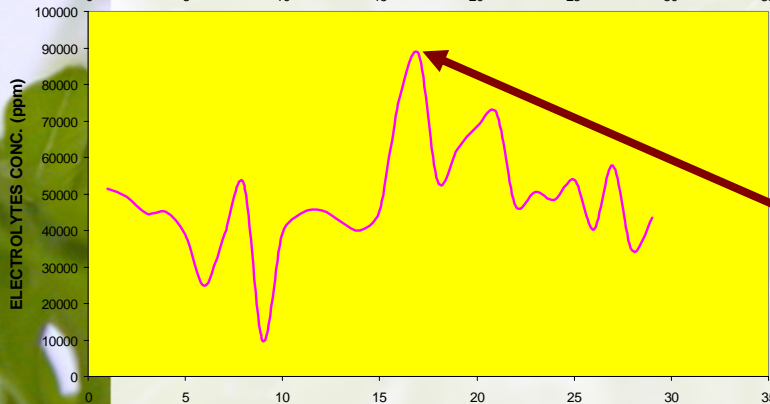




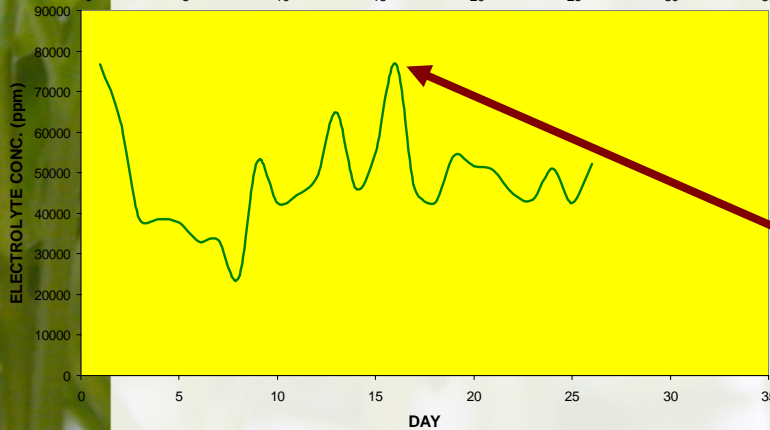
COMPARISON



13th day



17th day



16th day

ON THE WHOLE..

- only potassium (K) can be a reliable marker for ovulation whereas sodium was not
- Other electrolytes were also not suitable to predict ovulation
 - they were in different pattern in every menstrual cycle
 - any peaks of these electrolytes were not happened to be at ovulation but randomly fluctuated

Thank You