

# SALIVA AS A DIAGNOSTIC TOOLS

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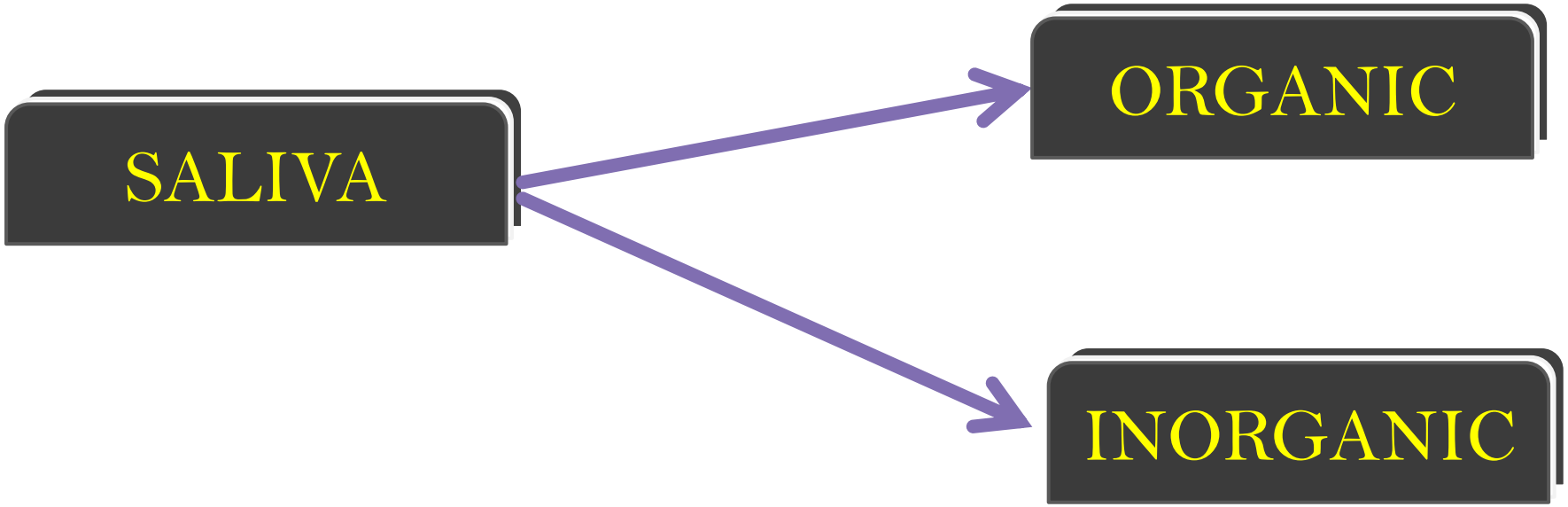


# INTRODUCTION

"watery liquid secreted into the mouth by major and minor glands which has lubricative cleansing & anti microbial and digestive function."



# COMPOSITION OF SALIVA



# NORMAL SALIVARY FLOW

- In general healthy
  - Adult 500-1500 ml/day
- USFR <0.1 ml/min (U)
- SFR <0.7 ml/min\
- About **1.5** lit daily
- **0.78** x **age** **+5.6** =**stimulated flow / 15 minute**

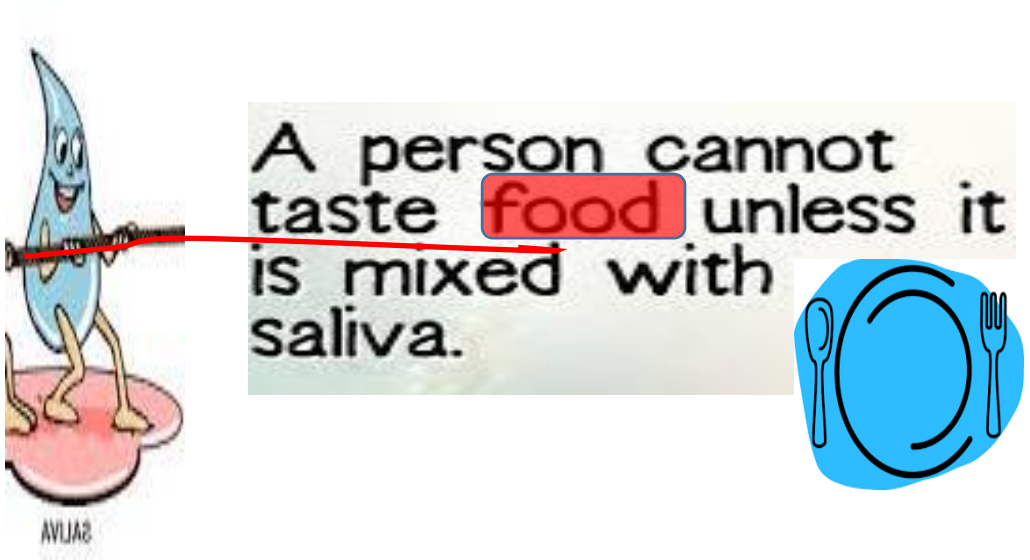


# FACTOR AFFECTING SALIVARY FLOW

- Patient position
- Condition
- Hydration
- Diurnal
- Seasonal variation
- Disease
- Syndrome



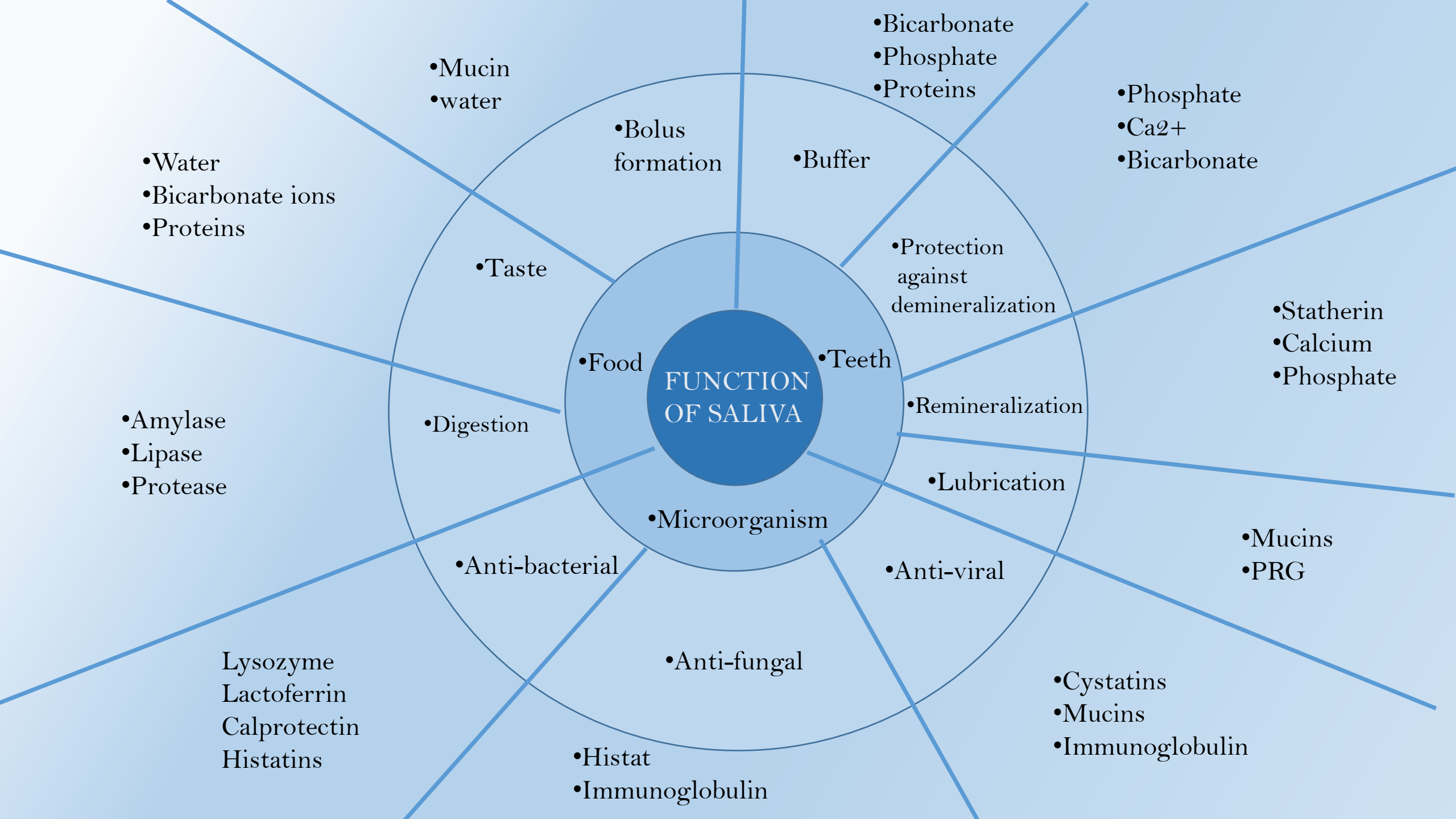
# FUNCTION OF SALIVA










FUNCTION OF SALIVA
•Food
•Teeth
•Microorganism
•Bolus formation
•Buffer
•Protection against demineralization
•Remineralization
•Lubrication
•Anti-viral
•Anti-fungal
•Anti-bacterial
•Digestion
•Taste
•Mucin
•water
•Bicarbonate
•Phosphate
•Proteins
•Phosphate
•Ca2+
•Bicarbonate
•Statherin
•Calcium
•Phosphate
•Mucins
•PRG
•Cystatins
•Mucins
•Immunoglobulin
•Histat
•Immunoglobulin
Lysozyme
Lactoferrin
Calprotectin
Histatins
•Amylase
•Lipase
•Protease
•Water
•Bicarbonate ions
•Proteins

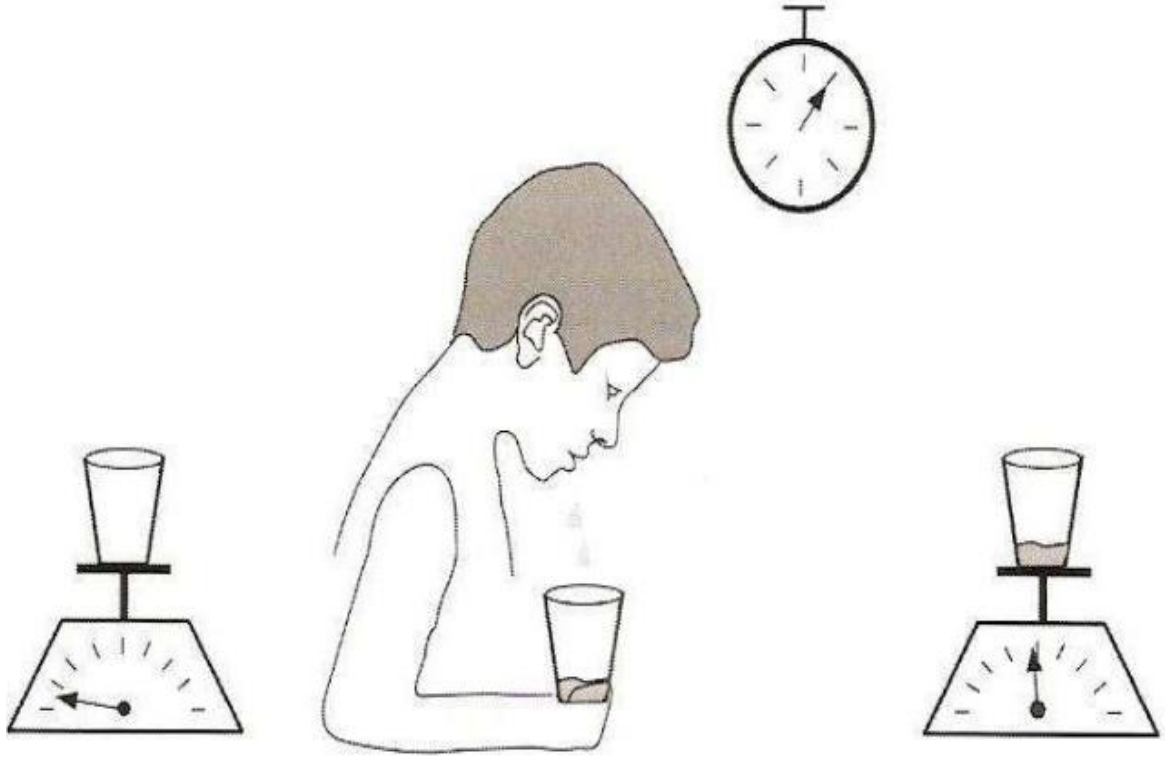
# TYPES OF SALIVA

- Gland specific :-The collection and evaluation of the secretions from the individual salivary gland

- Whole saliva :- Mixture of oral fluids includes

# METHODS FOR COLLECTING WHOLE SALIVA

- Draining method
- Suction method
- Spitting method
- Absorbent method



# PRECAUTIONS TO BE TAKEN BEFORE SAMPLE COLLECTION

- Avoid alcohol for 12 hrs & dairy products for 20 min
- Avoid  foods with high sugar or acidity, or high caffeine content before sample collection.
- Do not eat a major meal within 60 minutes before sample collection
- Document consumption of  alcohol, caffeine, nicotine, & any medication usage.
- Rinse mouth with water to remove food residue before sample collection, and swallow to increase hydration. Wait at least 10 minutes after rinsing before collecting saliva to avoid sample dilution.

# SCOPE OF SALIVA AS DIAGNOSTIC FLUID




Saliva reflects the body's health and well-being

# SALIVARY DIAGNOSIS IS AN INCREASINGLY IMPORTANT FIELD IN

- Dentistry
- Hereditary disease
- Autoimmune disease
- Malignancy
- Infection
- Viral Disease
- Syndrome
- Monitoring of levels of drugs.
- Monitoring of levels of hormones
- Bone turnover marker in saliva
- Internal medicine,

# DENTISTRY

## (DIAGNOSIS OF ORAL DISEASE WITH RELEVANCE FOR SYSTEMIC)

- Diagnosis of oral diseases
  - Caries activity tests
  - Snyder test
  - Enamel solubility test
  - Salivary reductase test
  - Alban test
  - Dental caries
  - Periodontal disease
  - Forensic odontology

# HEREDITARY DISEASES

- Cystic fibrosis is a genetically transmitted disease of children and young adults, which is considered a generalized exocrinopathy.
  - Abnormally high calcium level in Cystic fibrosis patient
- 21-Hydroxylase deficiency is an inherited disorder of steroidogenesis which leads to congenital adrenal hyperplasia. Early morning salivary levels of 17-hydroxyprogesterone (17-OHP) determined by ELISA is an excellent screening test for the diagnosis of non-classic 21-hydroxylase deficiency, since the salivary levels accurately reflected serum levels of 17-OHP

# AUTOIMMUNE DISEASES

- Sjögren's syndrome
  - Addition, increased concentrations of sodium and chloride, IgA, IgG, lacoferrin, and albumin, and a decreased concentration of phosphate were reported in saliva of patients with Sjogren syndrome
  - Reduce flow rate (<0.1ml/min)

# MALIGNANCY

- Squamous cell carcinoma
  - The p53 antibodies can be detected in the saliva of patients diagnosed with oral squamous cell carcinoma
  - Elevated levels of salivary defensin-1 were found to be indicative of the presence of oral squamous cell carcinoma

- Breast cancer
  - cancer antigen 15-3 (CA15-3) were found in the saliva of women diagnosed with breast cancer, as compared with patients with benign lesions and healthy controls.

# INFECTIOUS DISEASES

- Helicobacter pylori :- There was considerable variation in the detection rate of H.Pylori DNA in salivary samples.
- Shigella :- Anti-shiga toxin antibody in salivary samples.
- Pneumococcal pneumonia :- Pneumococcal pneumonia the detection of pneumococcal C polysaccharide in saliva
- Lyme disease :- The detection of anti-tick antibody in saliva
- Taenia solium :- The detection of anti-tick antibody in saliva

# VIRAL DISEASES

- HIV IgA antibody to HIV in saliva

  Detects antibodies against the p24 antigen of HIV.

- Measles, Mumps, and Rubella rotavirus (RV) infection than the serum antibody response

- Dengue detection of dengue specific salivary IgG and IgM antibodies

# SYNDROME

- Cushing's syndrome :- cortisol levels were found in saliva which is useful in identifying patients with Cushing's syndrome

# DRUG MONITORING IN SALIVA

- Benzodiazepines
- Carbamazepine
- Paracetamol
- Caffeine
- Phenytoin
- Cyclosporine
- Quinine
- Diazepam
- Sulfanilamide
- Amphetamines
- Oxprenolol
- Ethanol
- Cocaine
- Nicotine
- Opioids
- Phencyclidine
- Antipyrine
- Cisplatin
- Primidone
- Digoxin
- Irinotecan
- Tolbutamide
- Procainamide
- Drug Abuse/ Recreational Drugs
- Barbiturates
- Marijuana
- Phencyclidine
- Ethosuximide
- Theophylline
- Lithium
- Methadone

# HORMONE'S MONITORING IN SALIVA

- Some steroid hormones can be metabolized in the salivary epithelial cells by intracellular enzymes
  - Due to their lipid solubility, steroid hormones can be detected in saliva
- Salivary cortisol levels demonstrate excellent correlation with free serum cortisol levels

# BONE TURNOVER MARKER IN SALIVA

- the presence of osteocalcin and pyridinoline in human saliva

# INTERNAL MEDICINE

- Increased levels of albumin in whole saliva were detected in patients who received chemotherapy and subsequently developed stomatitis.
- Epidermal growth factor (EGF) in saliva is decreased during the course of radiotherapy.

# CONCLUSION

Saliva May Soon Replace Blood For Diagnosis

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