

# **ASTRINGENTS**

# DEFINITION

- These are the compounds which bring about protein precipitation.
- These are usually applied to damaged skin topically or to the mucous membrane of the GIT including the mouth. The precipitated protein and the astringent form a protective layer on the surface.
- Due to their protein precipitation action, astringents are able to reduce the cell permeability. Astringents are also known to inhibit the transcapillary movement of plasma proteins.
- They help to reduce local edema (swelling due to excessive fluid accumulation site), exudation and inflammation. Mucous secretion is also found to get reduced.
- When applied topically, astringents in low concentrations are found to stimulate growth of a new tissue. While in high concentration, astringents bring about corrosive effect on contact with tissue

# MECHANISM OF ACTION

- The protein-precipitation brought about by astringent occurs due to presence of metallic ions, in compounds, having large charge/radius ratio or strong electrostatic fields.
- The metal would form complex with various polar groups present on the protein or an enzyme.
- This complex at the active site of protein or an enzyme causes a drastic change in the properties of the protein.

# USES

- Stopping of bleeding by coagulation of blood and constriction of small capillaries.
- Anti-inflammatory by decreasing supply of blood to the tissues
- Antiperspirant by decreasing secretion of perspiration by reducing pore size of skin
- Antimicrobial by protein precipitation mechanism
- Used in diarrhoea

# ZINC SULPHATE

- **Formula-**  $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$
- **Mol wt-** 287.6

# PREPARATION

- (1) It is obtained by heating zinc blende (zinc sulphide) in the presence of air. The heated mass is dissolved in hot water, filtered and the solution is concentrated for crystallisation.



- (2) It is prepared by dissolving metallic zinc granules in dil. Sulphuric acid. The solution is filtered to separate the undissolved metallic zinc and filtrate is treated with chlorine to oxidise any ferrous sulphate impurity. The filtrate is concentrated and left for crystallisation.



# PROPERTIES

- Colourless transparent crystals, prism or needle or granular, crystalline powder
- Odourless with astringent and metallic taste
- Effloresces in dry air
- Soluble in water and glycerine but insoluble in alcohol

# USES

- When used internally, it acts as an emetic
- Externally, it is used in solutions and powders as astringent and also used for ophthalmic purpose.
- **Storage-** it is preserved and stored in well- closed containers in a cool place.
- **Dose-** 0.6-2g

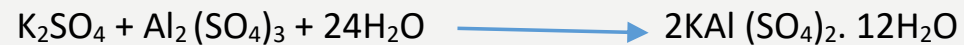


# POTASH ALUM

- **Formula-**  $\text{KAl}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$
- **Mol.wt-** 474.4

# PREPARATION

- It is obtained by adding a concentrated solution of potassium sulphate to a hot solution of an equimolar proportion of aluminium sulphate.
- When the solution is concentrated and cooled, characteristic octahedral crystals separate out.



# PROPERTIES

- Colour- colourless, transparent or granular crystals
- Taste- sweet astringent taste
- Solubility- soluble in water but insoluble in alcohol

# USES

- It is used externally for astringent action.
- It is having protein precipitation property so it is used in the preparation of toxoids.
- It also used as antiseptic and pharmaceutical aid.
- Barbers usually use alum by wetting it and rubbing it on skin after shave, for its astringent and antiseptic action.