Astringents

* An astringent (occasional alternative: adstringent) substance is a chemical compound that tends to shrink or constrict body tissues and precipitate the protein and astringent form protective layer on the surface.
* Due to their protein action, astringents are able to reduce the cell permeability.
* This reduces local edema, exudation and inflammation.
* The word "***astringent***" derives from Latin “***adstringere***”, meaning "***to bind fast***".
* They are usually applied to damaged skin topically or to the mucous membrane of GIT including the mouth.

# Characteristics:

* Affect only the superficial layer. Reduce cellular permeability.
* Make the surface mechanically strong, decrease exudation.
* Protect from external irritation.
* Possess local styptic and local antiseptic action.
* May interfere with the function of pain receptors. The pain relieving action is mild.
* Constrict the blood vessels to stop bleeding.

# Types of Astringents:

1. *Vegetable astringent*s: Tannic acid, Gallic acid
2. *Metallic Astringents*:
   * Aluminium salts: Alum [KAl(SO4)2•12H2O], Aluminium chloride (AlCl3), Auminium acetate
   * Zinc salts: Zinc chloride (ZnCl2), Zinc sulfate (ZnSO4)
   * Ferric chloride (FeCl3)
   * Strontium chloride
   * Silver nitrate (AgNO3)
   * Copper sulfate (CuSO4)
3. *Miscellaneous:* Very cold water, Alcohol

# Indications:

* + - Swollen, inflamed and/or leaky tissues.
    - They are used to treated diarrhea or dysentery.
    - During leukorrhea (thick white/yellowish vaginal discharge)
    - During minor bleeding like Menorrhagia, Hemorrhoids.
    - They promote healing process.
    - They decrease sweating and possess deodorant properties.

 Mild astringent solutions are used in the relief of such minor skin irritations

as those resulting fromsuperficial cuts, allergies, insect bites, or fungal infections such as athlete's foot.

ZINC SULFATE

Uses

* In medicine it is used together with Oral Rehydration Therapy (ORT) and an astringent
* Zinc sulfate is an inorganic compound and dietary supplement. As a supplement it is used to treat zinc deficiency.
* 0.25% Zinc sulfate used for ophthalmic purpose.
* Zinc sulfate acts as emetics.
* It is used as in electrolytes for zinc plating, as a mordant in dyeing, as a preservative for skins and leather.

Side effects

Side effects may include abdominal pain, vomiting (2-8 mg/Kg of body weight), headache and tiredness.

ALUM

* They are white crystalline double sulfates of univalent and trivalent atoms.
* Alum is both a specific chemical compound and a class of chemical compounds.
* Many trivalent metals are capable of forming alums. The general form of an alum is AMIII(SO4)2•nH2O, where “A “is an alkali metal or ammonium, “MIII” is a trivalent metal, and “n” often is 12.
* In general, alums are easier formed when the alkali metal atom is larger. This rule was first stated by Locke in 1902.
* Double sulfates with the general formula A2SO4•B2(SO4)3•24H2O, are known where “A” is a monovalent cation such as sodium, potassium, rubidium, caesium, or thallium(I), or a compound cation such as ammonium (NH+4), methylammonium (CH3NH3+ ), hydroxylammonium (HONH3+) or hydrazinium (N2H5+), “B” is a trivalent metal ion, such as aluminium, chromium, titanium, manganese, vanadium, iron(III), cobalt(III), gallium, molybdenum, indium, ruthenium, rhodium, or iridium.

Types of Alum:

|  |  |  |  |
| --- | --- | --- | --- |
| **Class** | **Chemical Name** | **Synonym** | **Formula** |
| **Potassium alum** | Aluminum potassium  sulfate | potash alum | KAl(SO4)2·12H2O |
| Potassium aluminium  sulfate | alunite | KAl(SO4)2·2Al(OH)3 |
| Potassium aluminium  sulfate | kalinite | KAl(SO4)2·11H2O |
| * ***Uses:*** It is also used in so-called "crystal" deodorants and water   purification. | | |
| **Sodium alum** | Soda alum | mendozite | NaAl(SO4)2·12H2O |
| * ***Uses:*** Soda alum is used in the acidulent (*being sour to the taste*) of food as well as in the manufacture of baking powder. | | |
| **Ammonium alum** | Ammonium aluminum  sulfate | Tschermigite | NH4Al(SO4)2·12H2O |
| * ***Uses:*** Used in water purification, in vegetable glues, in porcelain cements, in deodorants, in tanning, dyeing and in fireproofing   textiles. | | |
| **Chrome alum** | Chromium(III) potassium  sulfate | Chromium alum | KCr(SO4)2·12H2O |

* ***Uses:*** It is a ***dark violet crystalline*** and used in tanning.

 Uses:

* Alum is used as an adjuvant in many subunit vaccines, such as include hepatitis A, hepatitis B, and Diphtheria Tetanus Pertussis (DTP) in order to augment the body's response to immunogens.

(An Adjuvant is an agent that may stimulate the immune system and increase the response to a vaccine. Adjutants having aluminum have been proven to make some vaccines last for longer period of time and to help generate more antibodies to fight against disease.)

* Alum in rock form is used as an aftershave. If it is rubbed on a freshly shaved face, its astringent property helps to prevent and reduce bleeding in minor cuts and abrasions.
* Alum's has a strong antibacterial property and so it is useful as a natural deodorant by inhibiting the growth of the bacteria responsible for body odor.
* Alum is listed as an ingredient of toothpaste or toothpowder and pharmaceutical aid..
* Alum acts also as a styptic to contract organic tissues and stop or reduce hemorrhage and bleeding.
* It is also used as an emetic agent to induce vomiting when a person has swallowed poison.