**Acetic Acid**

Acetic acid consists of a methyl group attached to a carboxyl group and exhibits distinctive sour taste and pungent smell. The global demand of acetic acid is about 6.5 million metric tons per year. Vinegar is the diluted form of acetic acid (approximately 4% acetic acid) which is prepared by fermentation and subsequent oxidation of ethanol. Acetic acid can be produced chemically in industries which accounts for 75% of the total production and/or by biological fermentation processes contributing near about 10% of the total production. Chemical processes mainly include methanol carbonylation, acetaldehyde oxidation and ethylene oxidation (Wacker process). Biological fermentation takes place aerobically (two step process where alcohol/ethanol acts as the intermediate) and anaerobically (one step direct process without the formation of ethanol/alcohol). In aerobic or oxidative fermentation, vinegar is formed from alcohol in presence of Acetobacter and in anaerobic process Clostridium or Acetobacterium can convert sugars to acetic acid without the formation of ethanol.

**Uses of Acetic acid**:

* As a food ingredient, it is found commonly in marinades, mustard, salad dressings, sauces, canned fruits.
* Used in boiler water additive, suitable for steam that contacts food.
* It is immensely used in meat, poultry, milk, and cheese products.
* As a flavor enhancer and flavoring agent; acidifier, color diluents, curing, pH control agent, solvent and preservative.
* Vinegar is used directly as a condiment, and in the pickling of vegetables and other foods
* Effectively used for cleaning and sanitizing food preparation equipment and utensils.
* Acetic acid (1%) acts as an antiseptic which is used to minimize the activity of streptococci, staphylococci, pseudomonas, enterococci
* It is an active component of edible films.
* It is also added to mayonnaise to deactivate Salmonella.
* It is used for microbial decontamination of meat and as mild descaling agent in food industry.
* It is used in grey mould control in harvested apple fruit.
* Acetic acid and its anhydride are widely used in the production of modified starches (starch acetates)
* It is on the World Health Organization’s List of Essential Medicines, the safest and most effective medicines needed in a health system
* Acetic acid injection into a tumor has been used to treat cancer since the 1800s
* Treatment of skin infections caused by pseudomonas strains resistant to typical antibiotics