THE INTRODUCTION OF NISIN

1. INTRODUCTION :

a) It was first discovered in the year 1928 and first isolated in the year 1947.

b) It was first used as Food Preservative in the year 1951. It was also recognized as "Food Preservative" by FAO / WHO as a safe Preservative and as a quickly digestible in human body , leaving no residue in the body .

c) Nisin is applied as a Food Preservative in over 50 countries and areas all over the world. The products of Nisin enter into international markets, warmly welcomed by the consumers.

2. THE PROPERTIES :

a) **NISIN** is a mixture of closely related antimicrobial polypeptides, produced by strains of *Lactococcus lactis subsp. Lactis* and can be digested into Amino Acids by *α-chymotrypsin*in in human Intestines and Stomach.

b) The use of NISIN **will not affect the normal Bacterial community**, nor produce the drug resistance or *chiasmatic* resistance as it happened when the Antibiotics used.

c) NISIN is a **Non-poisonous** and **high efficacious Food preservative** / Anti-Microbial Agent.

d) It possesses Anti-Microbial activity against a wide range of **Gram- positive bacteria,** particularly those that produce spores, which are the major food spoilage organisms, such as *Clostridium botulinum, Staphylococcus aureus, Streptococcus hemolyticus, Listeria monocytogenes, Bacillus stearothermophilus, Bacillus subtilis* etc.

3. THE ADVANTAGES :

a) The use of NISIN, as a Food Preservative, can

- Greatly **decrease the required Temperature,**
- **Shorten the time in Food Heat processing**,
- It **improves** the **Nutritional value**, Appearance, Flavor and Texture of foods, and significantly **prolong the Shelf-life**.
- It also **saves the Energy** greatly and **lower the product and Production cost.**

b) Now, **NISIN** has been **used in a wide range of Processed foods**, e.g. Cured meat, Dairy products, Plant protein Foods, Canned foods, and Heat-treated /Air-tightly packed foods etc.

c) It can also be used in the **Area of Cosmetics, Medicines and Health products.**

d) It **can replace** or partial replace chemical preservatives and meet consumer demand for Food preserved with Natural Ingredients.

e) It is **Non-Toxic**, the producer strains of L. Lactis are regarded as safe (Food Grade) .

f) It is used **alone** or in **combination** with other preservatives e.g. Benzoic Acid , Sorbic Acid and Potassium Sorbate .

4. ANTI-MICROBIAL PROPERTIES :

NISIN possesses highly of **inhibiting activities** to **Gram- positive Bacteria,** particularly to spore- forming bacteria.

It **inhibits** certain **strains of the Food pathogen**, such as Clostridium botulinum, Staphylococcus aureus, Streptococcus hemolyticus, Listeria monocytogenes, Bacillus stearothemophilus, Bacillus subtilis and some others. It does not influence Gram-negative Bacteria, Yeasts and Moulds generally. But under some circumstances (such as freezing, heating, low pH and adding of EDTA), NISIN can inhibit some Gram-negative bacteria such as *Salmonella* spp, *Shigella* spp, *Klebsiell* spp *Escherichia coli* etc.

5. DIRECTION OF USAGE :

About 5% Aqueous solution is prepared firstly with cold Boiled water or Distilled water (best with diluted acid solution), then, instantly put it into food and stirred well. Or put it directly into food and stirred well.

6. RECOMMENDED DOSAGE :

The general dosage is 0.05 gm / kg. to 0.1gm / kg.

The detail dosage of NISIN depends on End products, Raw material's Quality, Nature of the processes, Shelf Life of End Products and Storage conditions of End Products etc.