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Preservatives: Importance, Defects and Economics Properties

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Abstract

Colors, sweeteners, and other additions have been classified as food additives. All things considered, additives serve 27 purposes, one of which is food preservation. Additives must not be utilized to deceive consumers, have a legitimate technological purpose in foods, and be safe and advantageous for the consumer at the intended level of use. Safin food by natural preservatives food is becoming more and more natural or "green/organic" in appearance due to the growing trend of using safer and natural preservatives. Applications of plant essential oils (Eos) as food preservatives have received special attention. Safin food by (sodium benzoate) has been extensively utilized in a variety of meals and soft beverages as an antibacterial and preservative. Furthermore, potassium sorbate is a kind of bacteriostatic antiseptic agent that is frequently employed in the food sector and has been utilized extensively as an efficient chemical preservative against yeasts and molds. Despite the fact that this substance is widely accepted as safe for use in food additives, research has indicated a possible connection between attention deficit hyperactivity disorder in children and excessive SB intake.

Key Words: Food Preservatives, Food Additives, Sodium benzoate**,** Potassium Sorbate

1. Introduction

One of the earliest technologies utilized by Man is food preservation, because food is so essential to survival. For this objective, various methods and techniques have been discovered and improved. Salt and sugar are frequently utilized as preservatives [2]. Chemicals known as "used preservatives" can be synthetic or natural and are applied to a variety of goods, including paintings, cosmetics, meals, medications, and biological samples. To stop microbial growth or unfavorable chemical changes from causing breakdown [3]. And there are many processes to save food as pasteurization and Appertization [6]. There has been a lot of attention lately in employing natural food additives to stop foodborne pathogens from growing or to postpone food spoiling. Plants are a plentiful source [7]. The unique chemical and aromatic properties of essential oils serve a variety of vital purposes in nature [8]. Sodium benzoate, a synthetic additive, widely used in the food industry and generally regarded as safe, is one of the most important preservatives. It is used as a preservative against bacteria, yeast, and fungi in the food and soft drink industry, as well as in the pharmaceutical and cosmetics industries, and it has been shown to improve the symptomatology of patients with clozapine-resistant schizophrenia. The World Health Organization (WHO) recommended a maximum sodium benzoate concentration of 2000 mg/kg in 1997 [13،14]. Sorbic acid's potassium salt is known as potassium sorbate (PS), IUPAC-ID. The potassium's name (2,4-hexa-2,4-dienoate) as given by E-202's name in the food sector [17]. Is among the prevalent Preservatives that are added to food [19]. PS has been employed in the food and pharmaceutical industries as an effective preservative.

Thus, coatings such as PS to preserve the quality, nutritional value, and defense mechanisms of mango fruit during storage and selected bacteria to extend the shelf-life of certain seafood [20].

2. Methods of Research and the tools used

Orange simple essential oil:
To prepare essential oils Specifically simple Eos like orange Eos at First, we were sun-dried orange peel under room temperature then we put this dried peel in olive oil (It can be replaced by Coconut Oil) the rate will be 1gm of dried orange peel to 10 ml of olive oil. So we used 6 gm of dried orange peel and Dissolved them in 60 ml of olive oil. Then we put this mixture Under the sunlight for 5 days. After the expiry of the period we filtrate this mixture by using Paper nomination. The product of this process will be orange simple essential oil.

3. Discussion

3.1. Reason for Food Spoilage

Abert contended that contact with air was the root cause of food deterioration and that the reason for his method was that it excluded air from the product. This perspective persisted for a another fifty years, with occasionally disastrous outcomes, until Pasteur's research demonstrated the connection between rot and metastatic activity. Two different types of heat processes were available today to eradicate microorganisms from food, paper, and consumption.[7].

3.2. Process of Saving Food

There are two uses for pasteurization, which is the name for heat treatments that are usually administered for a few minutes at temperatures between 60 and 80 °C. The first step is to eradicate a particular pathogen or pathogens connected to a product. When a product has been repeatedly linked to illness, this kind of pasteurization is frequently mandated by law as a public health precaution. The safety records of milk, bulk liquid eggs, and ice cream mix have significantly improved due to pasteurization. Pasteurization serves as a means of removing a significant amount of potential spoiling organisms from a product, hence prolonging its shelf life [7].

Appertization describes methods where the only organisms that make it through are non-pathogenic ones that can't grow inside the product under typical storage circumstances. Because of this, consumable goods last a long time even when kept at room temperature. The phrase was created as an alternative to the commercial sterile label, which is still commonly used, but was criticized for being a relative concept—a material is either sterile or it is not. Food that has been commercially sterilized or ingested need not be sterile or entirely devoid of living things. It is, however, free of living things that could proliferate in the product in typical storage circumstances. [7].

3.3. Food Additives

Different colors, sweeteners, and additions are categorized as food additives. Additives generally serve 27 purposes, one of which is to preserve food. Additives must not be utilized to deceive customers, have a justified technological role in the food, and be safe and beneficial to the consumer at the intended level of use. Additives generally have the advantage of preserving the nutritional value of nutrients [1].

3.4. Food Preservatives

One of the first methods employed by humans is food preservation, since food is so essential to survival. For this reason, numerous techniques and tools have been developed. Preservatives like sugar and salt are frequently utilized. Although chemical preservatives are also utilized, they are typically regarded as a stupid guide for preservation purposes, even though they seem to be the best and most effective for a longer shelf life. In a variety of laboratory methods, it has been claimed that certain food additives—particularly antimicrobial agents—are genetically harmful. Nonetheless, there exist a number of dietary preservatives whose possible genotoxic consequences remain uncertain. [2].
Chemicals, either natural or artificial, known as preservatives are applied to a variety of goods, including food, medicine, paint, cosmetics, biological samples, etc. To stop deterioration due to unfavorable chemical changes or microbiological development. In order to keep fresh food products and prevent the growth of undesirable bacteria, food preservatives are typically utilized throughout the production and storage of food. Sorbate, lactate, and parabines are the primary food preservatives that function as disinfectants in liquid meals. [3].

3.4.1. Natural Preservatives

Typically, commercial preservatives are used with natural preservatives. Its usage has been linked to possible health hazards, nevertheless. Safe substitutes in this regard could be certain plant-based preservatives. The following were employed in this study: lemon juice (LJ), basil leaf extract (BE), mint leaf extract (ME), and lemon grass dough oil (LGEO). [5].

3.4.1.1. Using of Natural Preservatives

The use of natural food additives to stop the spread of foodborne diseases or postpone food spoiling has received a lot of interest recently [26].

Plants are a rich natural supply of bioactive substances with antibacterial and pharmacological qualities, such as flavonoids, phenols (phenolic acid, tannins, and polyphenols), organic acids (lactic, citric, and acetic), and essential oils. [27].

Researchers at Mahanta have extracted antioxidant and antibacterial compounds from the corky coral tree, Erythrina sub-rosa (Roxby). [28].

According to Aurelia et al., the presence of a significant concentration of bacteriostatic chemicals, such as phenolic compounds, in Kulim's leaves (Scorodocarpus Borneensis), is responsible for the demonstration of the leaves' amazing potential as a natural preservative in 12 out of 32 essential oils.[32].

By removing the antioxidant and preservative qualities from food products, these bioactive substances may prolong the physiological lifespan of living things. [6].

In order to satisfy consumer demands for healthier food options, natural food preservatives are in high demand in the food sector. One of the main sources of the bioactive substances that naturally preserve food is plants. Worldwide, plants have been revealed to have about 10,000 different types of bioactive chemicals having antibacterial characteristics. But there is still much to learn about the potential uses of numerous more plant species as food preservatives.[6].

3.4.1.2. EOs for Saving Food

Human survival depends on food, and food safety is crucial. For customers, it is also necessary in various industries. Through statistics, the World Health Organization found that one person out of every 10 people becomes ill due to eating contaminated food, 420 000 die as a result (WHO, 2015) [33]. Because of this threat caused by food contamination and its effects on the social and economic aspects, there was a pressing need to make food safer by developing food preservation agents using a non-toxic substance. At the same time, this substance is anti-microbial and anti-oxidation processes that occur in food, despite From the presence of artificial food preservatives, there were some fears about the effects resulting from the use of these materials [33].

For example, some reports indicate that there are some synthetic antimicrobials that are used as preservatives and pose a major threat to consumer health. Such as the use of sulfate groups, which is a class of substances with sulfur bases that were utilized as preservatives in commercial settings. They had certain negative effects on human nutrition and health, such as thiamine or vitamin B in food decomposing. Which is something undesirable. As a result, resorting to the substance as a natural preservative was safer and made food has a natural appearance and does not lose its nutritional value. The focus was on using essential oils as one of the most important materials for preserving naturalness [8].

3.4.1.3. The Natural of Essential Oils

It is a mixture of biologically active compounds that have great antibacterial activity and also have strong properties to prevent the oxidation process. It is a mixture of the following compounds: terpenes, terpenoids and of phenylpropanoids aromatic plants [9].

3.4.1.4. Essential Oils Synthesis

Essential oils are manufactured by almost all plant organs, especially in certain parts such as flowers, buds, leaves, and seeds. These essential oils are also stored in specific places in plants, such as epidermal cells, cavities, and secretory cells, taking into account that the method of extracting essential oil from each part of plants varies. From one plant to another, such as if we have citrus fruits and we want to extract essential oil from them, this is done through cold pressing or an impregnation process specifically applied to roses [8].

In general, the manufacture of essential oils in almost all parts of plants makes them widely available. For example, there are about 3,000 types of essential oils with multiple uses [8] .

3.4.1.5. Essential Oils and Climate

The chemical form and chemical composition of essential oil varies depending on the climate, as well as the age of the plant from which it is extracted, the method of isolation, and all of these things affect its antibacterial properties [10].

3.4.1.6. Essential Oils Extraction

Certain species, such as B. Olerana L., C. ambrosioides L., and O. Gratissimum, are used to extract their essential oils, such as by drying the leaves well in the sun at room temperature of 27 degrees Celsius for approximately 30 days, and then dissolving 1 gram of the dry mass of the leaves in 10 ml of water. This is how the essential oil is extracted later. The procedure has been modified. Extracting the essential oil by the two scientists Vitti and Brito (2003), who suggested the method of extracting the essential oil through the process of water distillation through steam extraction, and then after extraction, the essential oil is collected and stored in very fine tubes of a type Eppendorf-

type micro tubes and kept at a temperature of 4 degrees Celsius until it is used [11].

Figure 1 represents structures of some essential oil.

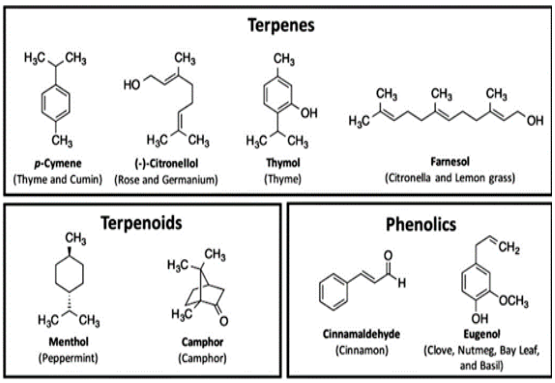


Figure 1

3.4.1.7. Essential Oils in Food System

Since essential oils have strong antibacterial properties as well as antioxidants, their health quality must be ensured in order for them to be used as a food preservative. For example, toxicity and the effect on the sensory properties of food must be studied in order to achieve consumer safety and, at the same time, sensory satisfaction, as well as the effect of these substances or oils. Aromatics affect the sensory characteristics of food, such as color, texture, smell, and sweetness of the food substance, before applying this substance commercially. In order to assure the safety of essential oils before they are applied and used, it is also vital to determine any potential negative effects. This is done in laboratories and through a number of studies on the bodies of living things [9]. For example, when studying the toxic effect caused by some essential oils, it was found that thymus Algerians were the results of using it are: The mice given a 2000 mg/kg bw dose of EO showed obvious symptoms of toxicity, such as polyenes, ataxia, hypoactivity, and abnormalities in motility. In 4 hours, these indications disappeared [36].

3.4.1.8. Essential Oils and Their Impact in Qualities

If the safety of the essential oil on human health is confirmed, the effect of the essential oil on sensory qualities such as Prior to use, color, smell, texture, and sweetness should all be investigated to increase the consumer's sensory acceptance. The researchers generally employed the hedonic scale, which has nine points. order to determine Whether the essential oil has an effect on the sensory properties to a significant extent or not, then, for example, the number 9 in this scale indicates that the effect of the essential oil on the food was very unpleasant, meaning that it changed the sensory properties of the food, and the number one in this scale indicates that the effect of the oil was Aromatic sensory properties are almost non-existent. [34].

In the long term, to avoid the effect of essential oil on sensory properties, nanoencapsulation technology was used, and this property or technology achieved very good results in terms of concealing the effect of essential oil on food, as well as concealing strong unwanted odors. These examples demonstrate the effects of nanoencapsulated Eos on the organoleptic features of the model system.

1-Cinnamon bark essential Oil which used to cook ground meat and the results of using it are: satisfactory in terms of flavor and aroma in both ground beef and ground beef that is ready to cook.

2-Trachyspermu mammi EO which added into the meat and the results of using it are: The chilled raw beef's color and sensory qualities stabilizing [9].

3.4.1.9. The Way (Mechanism) Which Eos Use to Product Food from Bacteria

In order for essential oils to protect food from bacteria, there was general agreement that the hydrophobic part, or lipids, in essential oils initially allows bacteria to pass through. Then the cytoplasmic cell membrane and mitochondria work to permeate its different layers of fatty acids, sugars, and phospholipids (that is, allowing most parts of the bacterial cell to pass through). In addition, the lipophilic sides of the bacterial cell membrane are gram positive, while the outer cell membrane surrounding the bacterial cell wall is gram negative, thus restricting the flow rate of bacterial cells into food. Bacterial cells become bound and eliminated, thus preserving the food from bacteria [35].

Moreover, the essential oils, after being bound to the bacterial cell, are capable of biologically destroying and dismantling the bacterial cell, as well as the internal parts of the bacterial cell and the structure of the cytoplasmic membrane, as well as destroying the important parts of the bacterial cell, such as the parts responsible for the formation of the various fatty acids, sugars, and phospholipid layers. With these two disorders, the cell begins to occur. The bacteria continue to deteriorate until the contents of the bacterial cell are leaked out and their energy molecules are destroyed, i.e. they are completely destroyed [8].

Figure 2 represent the EO anti bacteria mechanism.

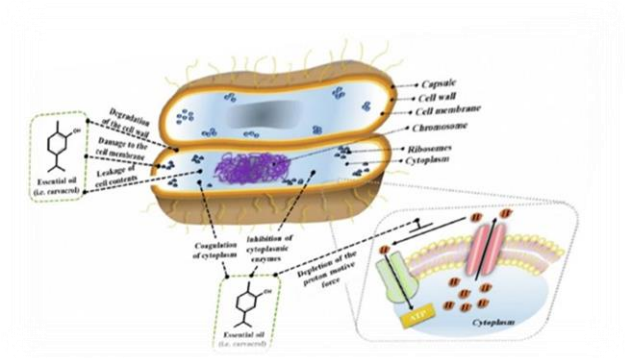


Figure 2

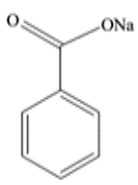
3.4.1.10. The Way (Mechanism) Which Eos Use to Product Food from Oxidation

Oxidation is a set of multilateral processes that create unfavorable changes in food, as well as affecting its nutritional content, sensory criteria, and food quality. It is considered one of the primary causes of food deterioration. It can also have toxic damage to food as well as consumer safety, and in some cases Sometimes food oxidation causes unwanted defects that are not accepted by the consumer[8]. Therefore, essential oils were used as antioxidants in order to reduce the damage resulting from this process. Essential oils mainly have their chemical components (alcohols, aldehydes, phenylpropanoids, terpenes, and ketones) These compounds show great effectiveness in acting as antioxidants as well [29]. To prevent oxidation reactions by preventing the start of a series of successive reactions by extracting hydrogen, scavenging and eliminating free radicals, as well as quenching single oxygen, thus preventing the oxidation process from occurring, and thus the food becomes safer for the health of the consumer [12].

3.4.2. Synthetic Preservatives

Synthetic preservatives are widely used to prevent alteration and degradation of the formulation through microbial contamination, owing to their high performance, low cost and wide availability [4].

3.4.2.1. Sodium Benzoate



In the human body, sodium is a necessary element that exists as a positive ion. It contributes to the biological body's metabolism of water and has significant physiological and nutritional benefits.

It is one among the essential elements of the muscle and nerve cells in the human body and helps to maintain the body's acid-base balance [22].

Benzoic acid in sodium salt is typically employed as a form of chemical preservation to stop microbial alterations or destruction throughout retention, Benzoic acids and sodium benzoate have both demonstrated inhibiting properties towards a variety of organisms such as yeast, bacteria, castings, and spores [13].

3.4.2.1.1. Sodium Benzoate Contents in Softly Flavored Drinks Without Alcohol

The non-alcoholic carbonated (soft) drink samples taken from the research area had sodium benzoate concentrations ranging from 5.1 to 277 mg/L at the minimum and maximum levels. The benzoate concentration's percentiles were 51.8 mg/L, 131.5 mg/L, and 211.3 mg/L, in that order. [15].

3.4.2.1.2. Sodium Benzoate Levels in The Human Body

1- The number of sperm and mobility significantly decreased at 10−1000 and 1−1000 mg/Kg biological warfare, respectively, due to SB.

2- The use of SB at a dose of up to 1000 mg/kg BW resulted in a notable reduction in testosterone plasma levels and an increase in aberrant sperm count.

The concerns of long-term exposure to both low and high doses of SB on male reproductive health are highlighted by the finding that the level of SB that has no documented detrimental effects on the reproductive system is less than 1 mg/kg BW/day [14].

Despite the fact that both sexes are equally exposed to dietary sodium benzoate through the consumption of non-alcoholic carbonated (soft) drinks, males are more exposed than females according to consumption habits. It follows that male consumers are inevitably more vulnerable than female consumers [15].

3.4.2.1.3. Economic Properties and Benefits of Using Sodium Benzoate

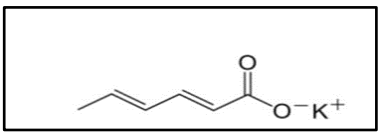
1- Some rare illnesses that mostly affect children are treated with sodium benzoate as a medicinal agent.

2- Certain uncommon conditions including hyperammonaemia and non-ketonic hyperglycinaemia are treated therapeutically with high dosages of sodium benzoate [23].
3- Sodium benzoate is widely used in a variety of items, such as cooling systems for radiators, sheets used to wrap metal in products that are prone to corrosion, and syrups used in medicine to prevent the growth of mold and yeast in food [24].

3.4.2.1.4. Defects of Using Sodium Benzoate

1- Due to sodium benzoate's mechanistic capacity to transform into the classified carcinogen benzene, there is significant worry regarding its use in non-alcoholic carbonated (soft) drinks [15].
2- It has also been demonstrated to inhibit neuronal stimulation necessary for the release of pituitary gonads important for spermatogenesis and steroidogenesis in the testes, resulting in nephrotoxicity, liver damage, neurological damage.
3- Reduces the activity of antioxidant-producing enzymes in the testes by causing oxidative damage and inflammation [14].
4- It decreases the proteinase function by 20% and 50%, correspondingly [17].

3.4.2.2. Potassium Sorbate



3.4.2.2.1. Chemical Properties

PS's antimicrobial capacity is dependent on acidity and sorbic acid dissociation.
Sorbate's the pKa is 4.7 at pH = 7, when 70% of the product is bonded, whereas at pH = 7, just 0.6% of the product is bonded; pH < 7.4 is when almost all its action takes.
This substance is insoluble in benzene but readily soluble in water (58.5 g/100 mL at 100 °C), chloroform, and maize oil. It is rarely soluble in EtOH or CH3COCH3.
Temperature, pH, foods mixture, activity of water, different metals, and other ingredients in food can all have an impact on PS's stability.
Its solubility increased with water temperature, but it is reduced in the presence of high levels of EtOH [38].

3.4.2.2.2. Potassium Sorbate Reactions in Food

Is well known that a wide range of variables, like pH ratio and water activity, temperature, food mixture, ions of metal, packaging, and the existence of various food components, affect how stable PS is in food products. Sorbate, for example, is relatively unstable and decays in aqueous models of food processes, losing 35% of its amount after three months at 30°C, and less than 25% of it is still at 35°C after 40 days.
Food browning is caused by the sorbate reacting with various groups in food products, including the carboxyl group, and forming conjugates with them through double bonds through oxidation and polymerization of the sorbate at the conjugated double bonds (CDB). At various high temperatures, it may interact with secondary amines, ascorbic acid, and ferrous salts in food products to form similar materials.
May result in strong interaction of sorbate when there is iron salts like gluconate, citrate, and ferric to produce harmful compounds [17].

3.4.2.2.3. Antibacterial and Antifungal Properties of Potassium Sorbate

The antimicrobial properties of PS and sorbic acid are both extensively researched, but sorbates had a small impact on the development rates of organisms like bacillus cereus, campylobacter jejune, and enterobacter aerogenes while having a high effect on bacteria like Escherichia coli, staphylococcus aureus, clostridium sporogeneses, klebsiella pneumonia, pseudomonas aeruginosa, and penicillium notatum via a reversal of the microbe lag period [37].
Sorbate exhibits a stronger inhibitory impact on yeast and molds than bacteria since certain microbial types, such as lactic acid bacteria, are sensitive to it or even decompose it according to specific conditions [17,37].
PS's complete molecular chain may be the cause of its antibacterial effect. Solubles most likely prevent microbial development by changing the structure and functionality of cell membranes, as well as by preventing transport and metabolic processes [37].

3.4.2.2.4. Techniques of Potassium Sorbate Analysis in Food

The regulatory agencies and the food industry place a high priority on the analysis of different preservatives in food.
To determine the amount of a particular preservative that consumers consume in food, for example PS in an acidic or anionic form, quantitative ways of determination need to be established [17].

Spectrophotometers gas chromatography with mass spectrometry (GC-MS), liquid chromatography with mass spectrometry (LC-MS), capillary electrophoresis, and high-performance liquid chromatography (HPLC) that uses an

ultraviolet radiation detector or a UV-diode array detector (DAD) are the most often used analytical methods to guarantee the purity assurance of sorbets in food. Of them, GC-MS is one of the more dependable methods for measuring PS; however, Pylypiw et al. and Esfandiari et al. introduced HPLC as a faster and more precise way to determine sorbate in food items [30].

3.4.2.2.5. Economic Properties and Benefits of Using Potassium Sorbate

Potassium sorbate is considered an important preservative that affects the economy mainly in terms of national production, as it helps preserve food and prevent it from spoiling for a long time.

Good Manufacturing Practices (GMP) identifies this substances as harmless when diluted less than the allowed levels [17].

A lipidomic assessment of tan sheep meat treated with two different forms of preservatives was conducted. Potassium sorbate is utilized as a preservative in a variety of meat products.

More lipid deficits were caused by of including potassium sorbate; these findings could serve as a solid foundation for further studies on preservatives in beef products [18].

One useful technique for preserving the fresh jujube's keeping quality and preventing harmful fungus growth is PS composite covering [21].

PS is able to be applied as a substitute for parabens and stops the formation of mold, bacteria, and yeast in food goods [17].

3.4.2.2.6. Defects of using Potassium Sorbate

It must be mentioned that even though sorbate is used lawfully in the food sector, excessive amounts of the substance can cause adverse reactions like urticaria, asthma, and allergies.

As a consequence of inhaling this chemical and occupational pollutants, prolonged exposure could outcome in issues such headaches, chest pain, bronchial spasm or swelling of the airways, mucosal irritation, pulmonary edema, and stimulation of the respiratory system.

Consuming large amounts can lead to chromosomal abnormalities in human blood lymphocytes, ocular itchiness, and age-related contact dermatitis. In vitro studies have demonstrated that sorbate can have genotoxic or mutagenic effects in human central blood cells.

It has been demonstrated that the reaction between sorbic acid and nitrite in food products is what causes mutagenic chemicals to occur. Sorbate also harms the rat hepatocyte cell and its membrane during lipid peroxidation (LP) [31].

3. Conclusion

In the latter instance, Safin food was preserved using natural preservatives. Food preservation technologies tackle the difficulty of extending product shelf life by employing various elements to avoid the microbiological deterioration of food and inhibit/inactivate food bone pathogens retaining or even increasing its quasits. Food with a natural or "green/organic" appearance is becoming more and more popular due to the adoption of safer and natural preservatives. The use of plant essential oils (Eos) as food preservatives has received special attention.

To extend the shelf life of packaged foods, some sodas, and personal hygiene items, sodium benzoate is added as a preservative. Life does not happen by accident. It is therefore created in laboratories. Sodium benzoate is a chemical that can be used in a variety of applications, including medicine, preservative, and food and beverage preservation. It is also used in toothpaste, adhesives, cleaners, polishes, and cosmetics. Additionally, it's utilized in salad dressings, jellies, and fruit salads. You might still be more susceptible to sodium benzoate, though.. Because of the rising demand for processed foods, benzoates must be used as preservatives to prevent microbial development. As food is a matrix containing various substances, some of which may trigger processes leading to the creation of benzene, the utilization of sodium benzoates in food is therefore expected to increase. The testes are subjected to oxidative stress, inflammation, and mitochondrial damage caused by SB, which leads to cell damage and apoptosis. The amount of SB that has not been shown to have any negative effects on the reproductive system is less than 1 mg/kg BW/day. Because of this, the current study emphasizes the dangers of consuming SB over an extended period of time, even at low concentrations that are within permitted bounds. Is regarded by Good Manufacturing Practices as a harmless chemical (GMP) Potassium and nisin Sorbet and potassium Sorbet as preservatives are used in a broad range of meat.

A lipidomic analysis of meat from Tan sheep preserved with two different kinds of preservatives. Higher lipid losses were the result of adding potassium sorbet. These findings may serve as a solid foundation for upcoming studies on preservatives in meat products.

Inhibiting harmful fungus and preserving the storage quality of fresh jujube can be accomplished with PS composite covering. PS can replace paraben and stops the formation of mold, bacteria, and yeast in food goods. PS's antimicrobial activity is reliant on pH and dissociated sorbic acid.

4. Conclusion

Additives serve a genuine technological purpose in foods and are both safe and beneficial to consumers when used as intended. The use of plant essential oils (Eos) as natural food preservatives has garnered significant attention. Furthermore, synthetic preservatives such as sodium benzoate and potassium sorbate are commonly employed to avoid formulation change and degradation caused by microbial contamination due to their good effectiveness, low cost, and widespread availability. Safin food (sodium benzoate) is widely used as an antimicrobial and preservative in a variety of foods and soft drinks. Furthermore, potassium sorbate is a type of bacteriostatic antiseptic agent that is commonly used in the food industry and has been widely used as an effective chemical preservative against yeasts and mould. A Although this ingredient is usually considered as safe for use in food additives, research has shown that excessive SB consumption has negative consequences.

5. Acknowledgement

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