recognition of qualifications and easing visa restrictions for certain labour markets, countries can facilitate the movement of skilled workers while ensuring that migrants have safe and legal options for migration (ILO, 2017).

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EXAM-INE STRATEGIES FOR PRESERVATION I NCLUDING NATURAL PRESERVATIVES TO INCREASE THE LIFESPAN OF FOOD

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Abstract:

The main purpose of food preservatives, which are additional ingredients added to food, is to add flavor and extend its shelf life. This helps prevent food from spoiling and shields it from microorganisms like bacteria, yeast, and molds, as well as potentially deadly poisoning and other microbes that can cause food-borne illness (antibacterial function). Benzoates, sulfur dioxide, nitrates, and nitrites are examples of antimicrobials that help regulate and limit the development of microbes, fungi, and molds, pH control enhance food flavor or provide color to prevent spoilage etc. An extensive summary of the science underlying artificial and natural food preservatives is provided in this review study. The fundamental ideas of food preservation as well as the biochemical, enzyme-mediated, and microbiological mechanisms that lead to food deterioration are covered in the review's introduction.

Keywords: Preservation, Natural preservatives, Artificial Preservatives, Ethylene diamine tetra acetic acid, High Performance Liquid Chromatography

Introduction:-Food consumed by human and animals to produce energy can be raw, processed or formulated materials which can promotes growth and required to maintain good health. In most cases, there are no limitations on food consumption but sometime the excessive consumption of certain kind of food such as carbohydrate, fat, sugar and salt, may have harmful effects on health of consumer. Food products will promote the growth of microbial because chemically, they consist of water, fat, carbohydrates, protein and small amounts of organic compounds and minerals, since all these compounds are the source energy for microbes to grow. Several preservation techniques are suggested to stop this from happening. A preservative is a substance, either natural or synthetic, that is applied to many things, including food, medicines, paints, timber, etc., to stop microbial growth or unintended chemical changes from decomposing them. To extend the shelf life of many

foods and medicinal items, these preservatives are frequently applied [1].To guarantee the use of food with good nutritional content, which is crucial for human health, food quality must be maintained. Therefore, the best approach to maintain food quality and stop it from deteriorating is to use preservation techniques. These days, there are many different kinds of preservation techniques that may be applied to preserve food quality. items for an extended length of time, either via the use of contemporary preservation technologies or traditional means. Additional food preservatives, which fall into two categories—natural and artificial—are used in some of these preservation techniques [2].

There are six food classes, which are as follows:
1. Sweets and fatty acids, such as buttermilk, gel, beverages with sugar, etc.
2. Dairy goods, such as cheese, yogurt, milk, and so on.
3. Protein, such as meat, eggs, poultry, almonds, etc.
4. Vegetables, such as spinach, salad, tomatoes, etc.
5. Fruits, such as bananas, mangoes, and apples.
6. Carbs such as rice, bread, noodles, and so on.

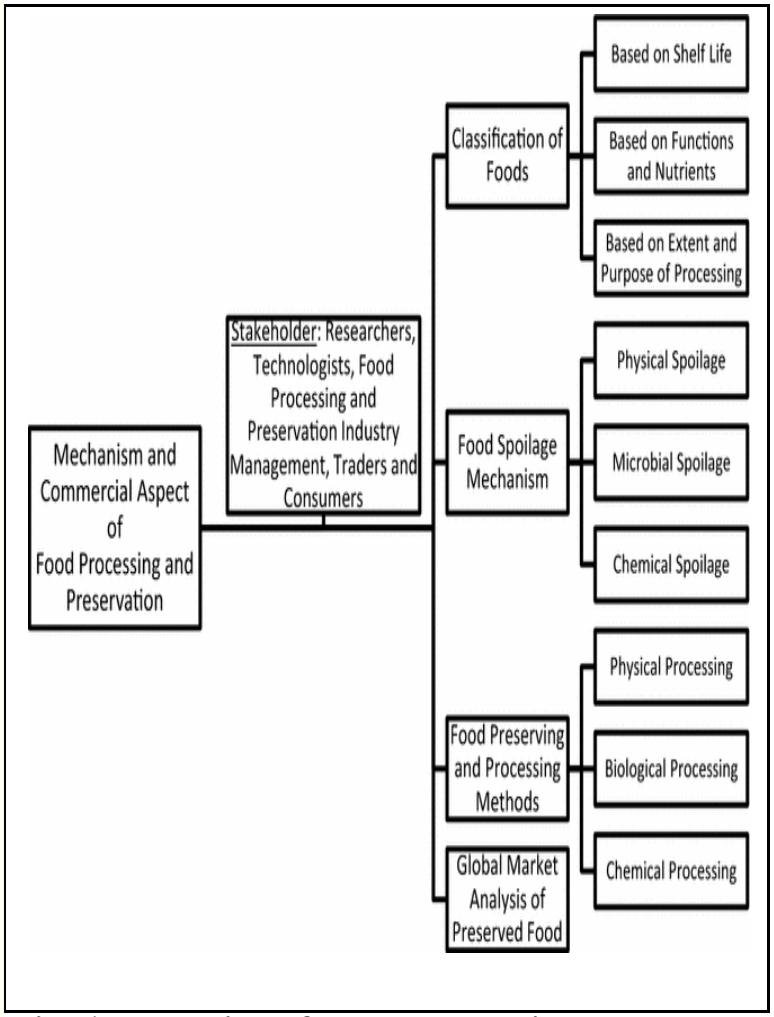

Fig. 1 Mechanism of Food preservatives

Table. 1 Classification of Preservative

Preservative Classification [3-5]	
On the basis of their class	**Class I:** Food preservatives derived from nature, such as salt, sugar, a vinegar-based products, herbs, honey, edible oils, etc., were included in this class. **Class II:** Benzoates, sorbates, potassium nitrites and nitrates, sulphites, glutamates, glycerides, and other chemical, semi-synthetic, or synthetic food preservatives were included in this class.
On the basis of Source	**Natural Preservatives:** Plants, minerals, animals, and other natural resources are the sources of these medications. For instance, Lemon Honey, Vinegar with Neem extract Salt (NaCl). **Synthetic Preservatives:** These preservatives are made from chemicals that, in little amounts, are effective against a variety of pathogens. For instance, nitrites, propionates, sorbates, sodium benzoate, and benzoates
On the basis of mechanism of action	**Antioxidants**: The substance that stops the oxidation of active pharmacological ingredients, which normally degrade because of oxidation since they are oxygen-sensitive. Vitamin C, for instance. **Antimicrobial**: The substance that works against both gram-positive and gram-negative microorganisms that break down medicinal preparations. which operate at a low degree of inclusiveness. For instance, benzoates, Benzoate of sodium. **Chelating Agent:** The substance that combines with medicinal ingredients to create a complex and stop the formulation from degrading. For instance, EDTA (disodium ethylene diamine tetra acetic acid).

Table 2. Food goods where preservatives can be utilized and their uppermost limitations [6-7]

Preservatives	Class	Utilization
Sodium and potassium benzoate, benzoic acid	Antimicrobial	Fruit Juices, Jams, Cheese, Baked Goods, Snacks etc.
Sulphates and sulphur dioxide	Antimicrobial	Dry fruit, fruits, Molasses, fried or frozen potatoes etc.
Methyl and propyl paraben	Antimicrobial	Baked goods, Beverages, relishes etc.
Sorbic acid, Sodium, potassium and calcium sorbates	Antimicrobial	Dairy products, sweets, syrups, jams, jellies etc.
Propionates	Antimicrobial	Cheese foods, fruits, bakery products etc.
Nitrites and nitrates	Antimicrobial	Meat products.
Propyl gallate	Antioxidants	Baked foods
Butylated hydroxy-anisole	Antioxidants	Potato products, cereals etc.
Tert-butyl hydroquinone	Anti-enzymatic	Foods and snacks etc.

Table 3. Codes assign for preservatives [8-10]

E Number	Name of preservative	Purpose
E 200	Sorbic acid	Preservative
E 202	Potassium sorbate	Preservative
E 203	Calcium sorbate	Preservative
E 210	Benzoic Acid	Preservative
E 211	Sodium benzoate	Preservative
E 212	Potassium Benzoate	Preservative
E 213	Calcium Benzoate	Preservative
E 214	Ethyl p-hydroxybenzoate	Preservative
E 215	Sodium ethyl p- hydroxybenzoate	Preservative
E 216	Propyl p-hydroxybenzoate	Preservative
E 217	Sodium propyl p-hydroxybenzoate	Preservative
E 218	Methyl p-hydroxybenzoate	Preservative
E 219	Sodium methyl p-hydroxybenzoate	Preservative
E 220	Sulphur dioxide	Preservative
E 221	Sodium sulphite	Preservative
E 222	Sodium hydrogen sulphite	Preservative
E 223	Sodium metabisulphite	Preservative
E 224	Potassium metabisulphite	Preservative

Table 4. Preservatives used in Pharmaceutical Formulations [11-12]

Category	Products	Preservatives
Oral	Tablets, capsules, suspensions and syrups	Methyl, ethyl, propyl parabens and their combinations, sodium benzoate, benzoic acid, calcium.
Parenteral (including Vaccine)	Small and large volume parenterals including vaccines	Methyl, ethyl, propyl, butyl parabens and their combinations, benzyl alcohol, chlorbutanol, chlorhexidine, thiomersal, formaldehyde.
Nasal	Nasal drops, sprays and aerosols	Benzalkonium chloride, phenylcarbinol, potassium sorbate, chlorobutanol, chlorocresol, EDTA
Ophthalmic	Eye drops, ointments and contact lens solutions	Benzalkonium chloride, EDTA, benzoic acid, thiomersal, imidurea, chlorhexidine, polyamino propylbiguanide, sodium perborate, boric acid
Dental	Toothpastes, mouthwashes and gargles	Sodium benzoate, benzoic acid, potassium sorbate, sodium phosphate, triclosan, cetylpyridinium chloride, methyl and ethyl parabens
Dermal	Cream, lotion, ointment, soap, bath gel, hair spray, shampoo and conditioner	Benzalkonium chloride, cetrimide, EDTA, benzoic acid, thiomersal, imidurea, chlorhexidine, chlorocresol, phenyl salicylate
Rectal	Suppositories and enema	Benzyl alcohol, benzoic acid, sodium benzoate, methyl hydroxybenzoate, chlorhexidine gluconate

Artificial Preservatives

By chemical processes, humans create these preservatives, which are effective towards a variety of pathogens at low concentrations. For example, sodium benzoates, Propionates, the nitrite and benzoate sorbates etc. After receiving approval from the Scientific Committee on Food (SCF), which is in charge of assessing the health hazards of food substances, the European Commission gives an addition of E-number.

Substances that have been certified for consumption within Switzerland and the European Union are denoted by E numbers, which are used by the dietary supplement sector globally [13].

Table 5. Methods of Preserving Food

Methods of Preserving Food [14]	
Drying	Drying is one of the first techniques for preserving food since it lowers water's activity enough to stop or slow the proliferation of germs. Additionally, drying lowers heaviness.
Canning	When done correctly, canning is a significant and secure food preservation technique. To sterilize food, canning entails heating it, enclosing it in sterilized bottles or jars, and then steaming the vessels to destroy or lessen any germs that may still be present.
Pickling	Pickling is an anaerobe fermentation method of food preservation. The final product is known as a pickle. This process imparts an acidic or salty flavour to the dish. Vinegar, alcohol, vegetable oil, and brine are common pickling ingredients. Its pH of below 4.6, which is adequate to eradicate the majority of microorganisms, is another distinctive feature. Perishable items can be pickled for months at a time.
Freezing	The two methods of food preservation that are most commonly used nowadays are most likely thawing and refrigerated. The goal of cooling is to slow down bacterial activity to a standstill so that food takes a lot longer to spoil—perhaps up to fourteen days as opposed to a few hours.
Vacuum Packaging	Food is often vacuum-packed in a sealed jar or bag. The vacuum atmosphere slows deterioration by depriving microorganisms of oxygen, which is necessary for their life. Food can be harmed by air, which can lead to rust, bacterial development, or property loss. Products that travel great distances can be preserved using this approach for several weeks or months if they are kept in a refrigerator.
Water Bath	Using this method, food is kept in a securely sealed glass container filled with water. Next, a saucepan filled with sufficient fluids to fully cover the jar is set over the container. After 50 minutes of boiling, turn off. Before causing a fast heat shift that may lead the bottle to burst, let the vessel cool fully within the container.

Risks to health from artificial preservatives-Although majority of artificial preservatives are thought to be harmless, others have harmful, carcinogenic, and lethal negative consequences. Popular preservatives found in many fruits, sulphites can cause migraines, heartburn, allergies, breathing problems, cancer, and other adverse reactions [15].

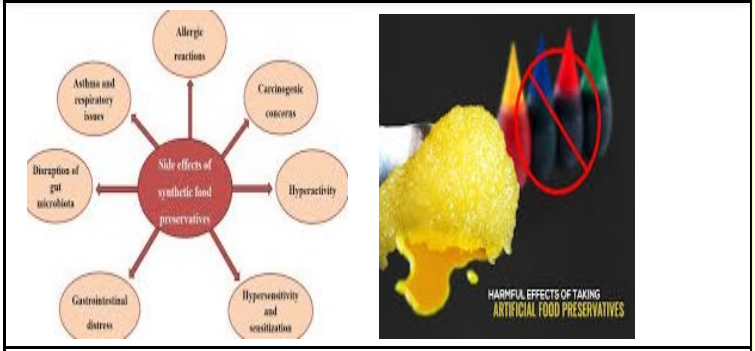

Fig 3 Hazards of Artificial Food Preservatives.

Table 6. Artificial preservatives and their problems associated [16]

Artificial Preservatives	Problems Associated
Nitrites and Nitrites	In order to avoid food illness, sodium nitrite is used as a preservative in animal products, hamsters, smoked meat, hot dogs, and salami. Although sodium nitrite can stop the development of germs that might cause botulism, it may interact with peptides and produce cancerous effects. N-nitrosamines whenever heated to high temperatures. When nitrate attaches to haemoglobin, the substance that transports oxygen from bloodstreams to the body's tissues, it produces chemically changed haemoglobin (methaemoglobin), which hinders the delivery of oxygen to the tissues and gives the skin its blue hue.
Benzoates	Benzoate is thought to be triggering harm to the brain and can cause allergies like breakouts on the skin and bronchitis. As microbiological food preservatives, benzoates have been linked to inflammation, respiratory conditions, and sensitivities.
Caffeine	Caffeine is a flavouring and colouring agent with diuretic and stimulating qualities. It may result in anxiety, heartburn, and in rare cases, cardiac abnormalities.
Sorbic Acid	Foods are treated with sorbates or sorbic acid as antibacterial preservatives. Although sorbate problems are uncommon, dermatitis from contact and urticaria have been reported

Natural preservatives: Better alternatives

Natural preservatives are likely a topic of greater scholarly interest than commercial or practical benefit. It does, however, offer a fantastic marketing aspect that might help to offset the greater cost of raw materials. The most popular preservation techniques that the formulator already has access to are reviewed first in the paper. Many of these instances may be found in the industry of food and drinks. The study then examines

how to browse through the available material and the issues with frequently employed substitutes for the procedure of preservation. This Review concludes by examining a few particular species that are frequently found in the toiletryFig 3: Natural preservatives and cosmetics industries and providing samples of a few of the botanical sources as shown in Table 7 [17].

Fig 3: Natural preservatives.

Table 7. Natural Preservatives and its properties [18]

Preservatives	Properties
Sugar	High amounts of sugar can protect foods against spoiling microbes; this is evident in jams, conserves, certain sweetness pickled veggies, and marmalades. This plays a significant role in ensuring the longevity of candy, boiled desserts, and other foods. As a result of the substitution of artificial sweeteners, which are less expensive and healthier to consume, for sugar, many items must now be stored in the refrigerator or freezer once they are opened, compromising the product's ability to preserve itself.
Honey	Undiluted honey is also an all-natural preservative; in fact, several scholarly articles mention honey's ability to operate as a viscoelastic shield against germs and illness.
Alcohol	Yeast's ability to convert sugar into alcohol is a separate business. Once the fermentation process is over, a wine that has been meticulously made using sterile supplies and brewed to 13% by capacity will barely be able to withstand additional infection from outside microbes. The moment of fermentation is when the fermented must is most susceptible to infection. Distillation may concentrate the naturally occurring fermentation-grade alcohol, which can then be utilized as a natural preservative in colognes, aftershaves, and toners.
Heat	Other alternative preservation methods that will sterilize items include heating, cooking, and pasteurization. This is particularly important for products that are intended for single-use, such phials or sachets. To stop microbiological deterioration, the product can also be kept in the refrigerator or freezer once it has been opened.
Anhydrous	Similarly, one may intentionally create and construct a completely anhydrous product by using ingredients that don't contain any water at all. The identical limitations that apply to desiccated goods also apply to gels that the user can complete by adding liquid to the mixture of oils, fats, and lubricants.
Cold	As long as the goods was pure before it was put in a freezer and/or had enough preservation "mass" to combat any newly acquired organisms, putting it in the cold just "stops the clock" on microbiological development, which is entirely OK.
Acidic pH	By keeping the pH as low as feasible, the preservation action can be increased. One of the several alpha hydroxy acids (AHAs) derived from citrus varieties, of which citric and malic acids are the main constituents, may provide natural acidity. In addition, it is astonishing that costly organic alpha hydroxy acid sources are being artificially produced while baobab oil makers discard significant amounts of tartaric acid as a byproduct.
Vinegar	Vinegar is utilized as in food industry and household preservation due to its low pH and acetic acid concentration. In actuality, it is employed to pickle a broad range of meals, including meat, vegetables, seafood goods, and spicy fruits.

Onion	It serves as one of the most commonly consumed veggies and offers a number nutritional advantage. Culinary quercetin is abundant in onions. The flavanols quercetin and kaempferol, which are frequently found in glycosylated forms, are their principal representatives. Onions have therefore been suggested as an excellent source of plant-based preservatives, which improve food stability and preservation while also raising its nutritional content. Onions have antibacterial properties because they contain thiosulfates and other volatile chemical substances. They are primarily in charge of the onion's distinct flavour, scent, and lachrymatory action, but their antimicrobial, anti-fungal and antimicrobial properties also make them highly desirable.
Oil	Food oxidizes and begins to spoil when it comes into touch with air. Oil prevents microbes from getting into touch with the food and reduces down the oxidation process.
Grapes fruit Extract	The fluid made from the seed mixture, pulp, and white membranes of the tangerine Citrus Paradise is sometimes referred to as citrus seed extract. Bacteria, viruses, fungus, and other microorganisms can be killed or their development inhibited by this endogenous broad range preservative. For best results, it should be used with other wide-ranging preservatives. It can be added to the composition in amounts as high as 1%.
Acid	In addition to adding taste, food acids serve as antioxidants and preservatives. Typical food acids include lactic acid sorbic acid, vinegar, citric acid, tartaric acid, malic acid, fumaric acid, and tartaric acid. These compounds prevent bacterial and fungal cells from growing, and sorbic acid prevents bacterial spores from germinating and proliferating.
Cloves	In addition to being utilized as natural food preservatives, medicinal herbs are used to season and taste meat, fish, bread, and cakes. They belong to the Myrtaceous family and are naturally occurring herbal remedies that are extracted from evergreen trees. They have emmenagogue, antibacterial, expectorant, aesthetic, and antihistamine qualities. By eliminating microorganisms, they can function as antibacterial agents.
Cinnamon	An antimicrobial and antibacterial essential oil is found in cinnamon, a medicinal plant. The bark, leaves, stems, flowers, and volatile oil are the primary components utilized in herbal therapy. You will feel warm and comfortable because to the powerful scent. This age-old spice has antispasmodic, digestive, astringent, carminative, anti-clotting, fragrant, germicide, and stomachic effects. It is also used as a sex stimulator and to treat uterine bleeding.

Identifying food preservatives using various analytical techniques:

Numerous analytical techniques for identifying preservatives have been documented. Numerous analytical techniques, including UV-visible, calorimetry, HPLC, GC, LCMS, and electrophoresis, were employed to identify different preservatives in a variety of food items using the suggested procedures [19].

Table 9. Methods of determining Preservative [20]

Preservatives	Methods
Benzoic Acid and Sorbic Acid	Overlapped HPLC –PDA
Sodium Benzoate and Potassium Benzoate	HPLC
Benzoic Acid	UV Spectrophotometry
Sorbic Acid	UV Spectrophotometry
Sodium, Potassium Salts of Nitrates and Nitrites	Colorimetry BHT And BHA HPLC
Methgyl Paraben Propyl Paraben	Methgyl Paraben Propyl Paraben

Conclusion and Discussion:

Due to growing consumer knowledge and concern about the negative consequences of synthetic chemical additions, foods preserved using natural ingredients have gained popularity. As a result, scientists and food producers are increasingly focusing on natural. preservatives. Natural food additives with minimal adverse reactions and those that are widely accepted as safe should be used if the utilization of nutritional additives is required due to their benefits. We have observed that natural preservatives have less adverse effects than synthetic ones, which are used to preserve foods, cosmetics, etc. accessible and reasonably priced. so that we can utilize it with ease. When applied to food goods, medicines, and cosmetics, organic preservatives not only prolong their shelf life but also inhibit the growth of microorganisms. Additionally, it keeps things fresh or consistent for a long period without having any harmful effects. Chemicals used as artificial preservatives have the potential to be harmful to one's health. These days, people are becoming more conscious of the negative consequences of chemical substances found in food, cosmetics, and medications. Because of their numerous health benefits and non-toxic nature, natural preservatives have more advantages than their artificial equivalents

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भारतीय जनजातीय जनसँख्या में परिवर्तन का विश्लेषण

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सारांश-

भारतीय संविधान के अनुच्छेद 366 (25) के अनुसार अनुसूचित जनजातियों को उन समुदायों के रूप में संदर्भित करता है, जो संविधान के अनुच्छेद 342 के अनुसार अनुसूचित हैं। इंसान चरित्र से स्वार्थी होता है लेकिन इतना भी स्वार्थी नहीं होना चाहिए कि किसी की जिंदगी को परेशानी में डाला जाये और उसके विकास की सारी हदें या सारे दरवाजे बंद कर दिए जायें | विकास का मुख्य उद्देश्य समानता और समरसता होता है और अगर विकास एक तरफ़ा और समाज के एक पहलू का हो तो वो समाज में अराजकता और भ्रष्टाचार और असमानता और सामाजिक विद्रोह पैदा करता है/ कुछ अख़बारों में छापे हुई समाचार की सचाई यहाँ दर्शना चाहते हैं कि कैसे जनजाति की भलाई वाली योजना का लाभ पढ़े-लिखे और अमीर दुरपयोग करते हैं | हर रोज सामाजिक भेदभाव की घटनाये भारत में होती हैं और उनका रूप बहुत ही तरह का होता हैI जैसे नीचे तस्वीरों में दिखाया गया है कि कैसे लोग जनजाति का प्रमाणपत्र बनवाकर लाभ के पद पर रह कर उन्ही का शोषण करते है और जातिवादी सोंच के साथ ही छुआछूत जैसे अमानवीय घटनाएं भी होती हैI अब ये बात सोंचने वाली है कि क्या ये सब अनपढ़ और अनभिज्ञ लोग करते है या कोई षड्यंत्र है जिसको पूर्व नियोजित तरीके से किया जाता हैI

क्या इसका प्रभाव आने वाली पीढ़ी पर सकारात्मक पड़ेगा या समाज में सामाजिक दूरियां बढेंगीI किसी भी रूप में सामाजिक समानता कायम करने में साहित्यकारों का अहम भूमिका थी और हमेशा रहेगी, इसलिए साहित्यकार समाज का वर्तमान और भविष्य का आईना होता है जो भूतकाल के अनुभव से वर्तमान और भविष्य का रास्ता निर्धारित करता हैI समाज को भाषा, भेष-भूसा, खानपान, रहन-सहन, कर्म, रंग आदि के आधार पर बाँट सकते है पर क्या मानव के प्राकृतिक स्वाभाव और प्राकृतिक संरचना को भी बांटा जा सकता हैI जनजाति और सभी जाति के लोगों में अगर कोई अंतर है तो वह है भाषा का और अगर सब की भाषा एक हो जाये तो शायद समाज को विकसित करने में ज्यादा समय नहीं लगेगाI कोई भी भाषा प्राकृतिक नहीं होती है ये अपने तरीके से अपने लिए अपनों के द्वारा संचार का माध्यम मात्र हैI अगर कोई भाषा प्राकृतिक होती तो नया जन्म लेने वाला शिशु अंग्रेजी में, संस्कृति में, हिंदी,उर्दू, पंजाबी, बंगाली, फ्रेंच, रसियन (रूसी), चीनी, जापानी आदि में रोताI इसलिए समाज में व्याप्त बुराईयाँ सिर्फ वाद से होती है और ये वाद है – भाषावाद, जातिवाद, क्षेत्रवाद, धर्मवाद, रंगभेदवाद, और अन्य तरह के वाद | जनजातियों की संख्या बढ़ना ठीक है, पर नीति विरुद्ध अतार्किक तरीके से बढ़ना देश व समाज के लिए घातक हो