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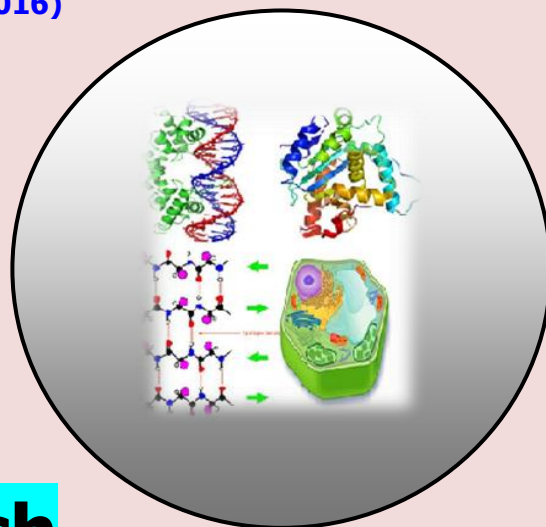
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RESEARCH PAPER

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Uses of Rock Salt in Diet with Table Salt: A wonderful Combination for Good Health

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ABSTRACT

Main sources of salt are the mineral halite or rock salt. Table salt is one of the most common household chemicals. Table salt is 97 percent to 99 percent sodium chloride. Rock have impurities of gypsum (CaSO_4), sylvite (KCl), polyhalite ($\text{K}_2\text{Ca}_2\text{Mg}(\text{SO}_4)_4 \cdot 2\text{H}_2\text{O}$) etc with NaCl . It is actually known as sendha namak in Hindi. We should use mixture of purified rock salt and fortified table salt in our diet in appropriate amount for better health.

Key words: Table salt, Fortified table salt and Rock salt.

INTRODUCTION

Sources of Salt

Main sources of salt are the mineral halite or rock salt. The minerals in mined salt give it a chemical composition and flavour depends to its origin. Rock salt commonly is purified, since halite occurs with other minerals, including some that are considered toxic. Native rock salt is sold for human consumption, but the chemical composition is not constant and there may be health risks from some of the impurities, which can be up to 15 percent of the mass of the product. Another common source of table salt is evaporated sea water. Sea salt consists mainly of sodium chloride, with trace amounts of magnesium and calcium chlorides and sulphates, algae, sediments, and bacteria. These substances impart a complex flavour to sea salt. Depending on its source, sea salt may contain pollutants found associated with the water source. Rock salt deposits ring dry lake beds, inland marginal seas, and enclosed bays and estuaries in arid regions of the world. In the past, very large water bodies such as the Mediterranean Sea that evaporated and made enormous deposits of rock salt. These deposits were later buried by marine sediments, but since halite is less dense than marine sediments, the salt beds "punched up" through the sediments and create dome-like structures. It is typically formed by the evaporation of salty water (such as sea water) which contains dissolved Na^+ and Cl^- ions.

Table Salt

Table salt is one of the most common household chemicals. Table salt is 97 percent to 99 percent sodium chloride. Pure sodium chloride is an ionic crystal solid.

Fortified Table Salt

One of the most common additives is iodine in the form of potassium iodide, sodium iodide, or sodium iodate. Iodized salt may contain dextrose (a sugar) to stabilize the iodine. Another common additive to table salt is sodium fluoride. Fluoride is added to help prevent tooth decay.

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"Doubly-fortified" salt contains iron salts and iodide. Ferrous fumarate is the usual source of iron, which is added to help prevent iron-deficiency anemia.

Another additive may be folic acid (vitamin B₉). Folic acid or folicin is added to help prevent neural tube defects and anaemia in developing infants. This type of salt may be used by pregnant women to help prevent common birth defects. Anti-caking agents may be added to salt to prevent the grains from sticking together. Any of the following chemicals are common: calcium aluminosilicate, calcium carbonate, calcium silicate, fatty acid salts (acid salts), magnesium carbonate, magnesium oxide, silicon dioxide, sodium aluminosilicate, sodium ferrocyanide or yellow prussiate of soda, tricalcium phosphate.

Rock Salt

This is the common name for the mineral "halite". Its chemical formula is NaCl(Table Salt). It have impurities of gypsum (CaSO₄), sylvite (KCl), polyhalite (K₂Ca₂Mg(SO₄)₄.2H₂O) etc. It is actually known as sendha namak in Hindi, and is a highly crystalline salt. It is very highly regarded in Ayurvedic tradition.

Chemistry behind Salt

There are fifteen essential minerals required by our bodies to function properly. These can be divided into "trace minerals", those required in very small amounts, and "macro-minerals" or "major minerals", those required in larger amounts. The six major minerals required in excess of 250 mg per day include: Calcium, Magnesium, Potassium, Phosphorous, Sodium and Chloride. The body needs these minerals on a regular basis as it cannot manufacture them. Four percent of the body's weight is made up of minerals, but their function as regulators is vast. Dietary minerals and trace elements are chemical substances required by living organisms in addition to carbon, hydrogen, nitrogen, and oxygen that are present in nearly all organic molecules. Minerals are present in up to tens of thousands of grams in the human body whilst only a few grams of trace elements are required by the body. The recommended dietary allowance of minerals (RDA) is usually greater than 200 mg/day whilst that for trace elements is less than 200 mg/day and this can be used to classify the difference between minerals and trace elements. Table salt has Na, Cl, I etc. and Rock salt has Na, Ca, K, Mg, Cl, SO₄, I etc.

Sodium

Sodium serves as an important nutrient in the body and helps nerves and muscles to function correctly. It is also involved in the auto-regulation of the water and fluid balance of the body. High dietary salt intake presents a major challenge to the kidneys to excrete large amounts of salt administered. One of the main organ systems vulnerable to the adverse effects of excessive sodium in the diet is the cardiovascular system. Excess dietary sodium predisposes to high BP. Sodium deficiency can be caused by: gastrointestinal losses (vomiting, diarrhoea), the urinary system (Cushing's syndrome, osmotic diuresis, diuretics), Clinical features of reduced levels of sodium include irritability, muscle weakness, paralysis and impaired heart function.

Magnesium

Magnesium impacts nearly all of systems of the body due to its cellular and molecular function. As a fundamental ion in the body magnesium is utilized in key chemical reactions on a microscopic level throughout the body's cells, including its vital role as a co-factor to over 300 enzyme functions, and its role in DNA and RNA stability. Magnesium's effect on the body can be as intense as that of many prescription drugs, because magnesium functions as a regulator of electrolyte balance, metabolism, and other biochemical reactions. Magnesium is known to reduce muscle tension, lessen pain associated with migraine headaches, improve sleep, and address neurological disorders such as anxiety and depression. Healthy magnesium levels have been linked to lowered blood pressure, reduced incidence of type II diabetes, emergency migraine treatment, reduced symptoms of asthma, and improved memory. Magnesium is also a healthy part of bone and a necessary element in healthy calcium regulation.

Low magnesium intake has been linked to risk factors for: Osteoporosis, High blood pressure, Issues of heart health, Diabetes, Asthma. Symptoms of magnesium deficiency include muscle cramps or tremors, irregular heartbeat, fatigue, confusion, and irritability. Magnesium has been linked to reduced incidence of common conditions such as high blood pressure, diabetes, and metabolic syndrome in large peer-reviewed, long-term studies.

Calcium

Calcium is the most abundant mineral in the human body, containing approximately 1200g. 99% of the calcium is present in bones and teeth present mainly as hydroxyl apatite, with calcium to phosphate ratio of 2:1. The calcium makes up the inorganic component of the bone and provides cross linkage between the collagen fibrils of bone and forming a more rigid structure. Calcium also plays a role in several process such exocytosis, neurotransmitter release, and muscle contraction in smooth muscle. In the electrical conduction system of the heart, calcium works together with sodium as the minerals that depolarize the cell, proliferating the action potential and causing the plateau phase of the action potential. A deficiency of calcium can lead to disorders such as osteomalacia, osteoporosis, rickets, increased neuromuscular irritability, tachycardia, impaired blood clotting and increased carcinoma of the colon.

Potassium

Potassium is the primary intracellular ion with a concentration of 140mEq/l. It is the main ion involved in nerve and muscle repolarisation. Potassium also maintains homeostasis with intracellular osmotic pressure and fluid balance. Potassium ions also control the heart conduction system. Potassium deficiency can be caused by: gastrointestinal losses (vomiting, diarrhoea), the urinary system (Cushing's syndrome, osmotic diuresis, diuretics), Skin losses (excessive sweating, burns), Clinical features of reduced levels of potassium include spasms, headache, and dehydration.

Iodine

Iodine is a major component of thyroid hormones. Iodine is an essential dietary nutrient for humans because it is a key component of the chemical structure of thyroid hormones. Our bodies must have adequate levels of thyroid hormone, and hence iodine, to grow and develop normally. A lack of iodine will cause a variety of conditions including cretinism, goitre, miscarriages, still births of children and mental retardation.

Chloride

Chloride is an "essential" mineral for humans. It is a major mineral nutrient that occurs primarily in body fluids. Chloride is a prominent negatively charged ion of the blood, where it represents 70% of the body's total negative ion content. The suggested amount of chloride intake ranges from 750 to 900 milligrams per day, based on the fact that total obligatory loss of chloride in the average person is close to 530 milligrams per day. Chloride, in addition to potassium and sodium, assist in the conduction of electrical impulses when dissolved in bodily water. Deficiency of chloride is rare. However, when it does occur, it results in a life threatening condition known as alkalosis, in which the blood becomes overly alkaline. A tedious balance between alkalinity and acidity is in constant flux, and must be vigilantly maintained throughout the entire body. Alkalosis may occur as a result of excessive loss of sodium, such as heavy sweating during endurance exercise, and in cases of prolonged vomiting and diarrhea. Symptoms include muscle weakness, loss of appetite, irritability, dehydration, and profound lethargy. Excessive intakes of dietary chloride only occur with the ingestion of large amounts of salt and potassium chloride. The toxic effects of such diets, such as fluid retention and high blood pressure, are attributed to the high sodium and potassium levels. A large body of literature shows that high salt intake increases the risk of hypertension, cardiovascular diseases and stroke. Population salt intakes in most countries are above recommended levels. The majority of salt in Western diets comes from processed foods, while in developing countries the majority of dietary salt is added to food during food preparation. A technical report produced by WHO and the Food and Agriculture Organization of the United Nations recommended the consumption of less than 5 g of salt per day as a population nutrient intake goal.

Benefits of rock salt

Rock salt improves digestion and is a natural way to relieve stomach pain. Rock salt can also be used to cure stomach infections, and aids in deworming as well". Rock salt can be used to stimulate body's metabolism, and ultimately improve the functioning of body. Rock salt helps stabilise blood pressure by maintaining a balance of high and low blood pressures. For people with hypertension, It is a better alternative to table salt as it is high on potassium. Rock salt provides all the essential trace minerals and greatly improves the body's immune system. It fights harmful bacteria and helps kick illnesses to the curb. Rock salt is beneficial for people suffering from respiratory problems and sinus .Gargling with rock salt provides relief against sore throat, dry cough and tonsils, or dissolve rock salt in water and inhale steam. Rock salt reduces sugar cravings by reactivating insulin, and hence results in weight loss. Rock salt regulates the level of melatonin and thus, regulates our sleep cycle. Rock salt helps to relax the body and mind. To treat and manage stress and anxiety, mix a tablespoon of rock salt in water and take a relaxing bath.

CONCLUSION

We should use mixture of purified rock salt and fortified table salt in our diet in appropriate amount for better health.

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