Pharmaceutical Influences of Epsom Salts

Abstract
Epsom salt is a chemical salt with a mixture of magnesium and sulfate ions. Epsom salt and table salt are different in their chemical structure. Epsom salt plays various pharmaceutical effects in the medical field, where it affects various body organs. It plays an important role in releasing pain due to its effect on nerve and its character as anti-inflammatory and treatment of muscle cramps. Also, Epsom salt has a beauty influence on body care due to its effect on skin and feet. Not only Epsom salt has a grade effect on the health of human beings but also it has an effect on plant growth through its effect on soil. In this short communication, we summarize the biological effects of Epsom salt.

Keywords: Epsom salt; Mg ion; Sulfate ion; Nerve function; Muscle cramps

Introduction
Epsom salt is not a true salt, but it is known as a salt due to its chemical structure. It consists of a mixture of magnesium and sulfate (Figure 1a). It is composed of a small, colorless crystal, thus looking like table salt (Figure 1b). The "Epsom" portion is a place in England where it is naturally found [1].

Mechanism of action
Several studies indicated that, in water, Epsom salt dissociates into magnesium ions and sulfate ions. These ions are easily absorbed through the skin, which improves the benefit of Epsom salt [2].

Magnesium plays a vital role in the body, including regulating the activity of many enzymes, reducing inflammation, relaxation of muscle, and helping to prevent artery hardening. In addition, sulfates help in improving the absorption of nutrients, removing toxins from the body, and treatment of headaches [3].

Benefits of Epsom salt
There are numerous benefits of Epsom salt, which can be summarized in the following diagram (Figure 2) [4].

A. Medical benefits
1. Body relaxation
During stress, the level of magnesium ion decreases, while the other hand, the level of stress hormone (adrenaline) increases. Once Epsom salt dissolves in warm water, magnesium ions break apart from Epsom salt molecules, and then it is absorbed through the skin and level of magnesium in the body gets elevated. The magnesium helps by decreasing stress through promoting the production of serotonin, which is responsible for feeling calm and relaxation, and reduces the effect of adrenaline [5]. Magnesium also plays a critical role in the production of energy in cells (ATP) and helps in reducing stress [6].

2. Releases pain and muscle cramps
An Epsom salt characterized with its anti-inflammatory effect, making it beneficial in the treatment of bronchial asthma, sore muscles, and migraine headaches. Magnesium appears to inhibit nerve receptors linked to the trigger point pain and regulate the release of neurohormones [7].

3. Improvement of muscles and nerves function
Several researches show that magnesium ions in Epsom salt

Figure 1a Epsom salt consisting of a mixture of magnesium and sulphate.
5. Blood glucose regulation

Both magnesium, and sulfate ions regulate the glucose intake, secretion of insulin, so prevent development of diabetes. Magnesium deficiency could impair blood sugar control by reducing sugar uptake (insulin sensitivity), impairing insulin release and/or increasing oxidative stress [10].

6. Detoxification effects

The sulfates ions in Epsom salt helps in removing both toxins and heavy metals from the cells. Epsom salt can be used as saline laxative so, it removes the harmful bacterial in intestine and is used in treatment of constipation. Magnesium supports detoxifications systems in the body through its major role in the production of energy (as ATP), which provides cells with the energy they require for pumping out toxins before, during, and after they accumulate [11].

High levels of energy are needed for the function of sodium/potassium ATPase the enzyme that uses this energy to pump sodium ions from cells and potassium ions into cells. Cells use ATPase as the pumping mechanism for transporting nutrients, preserving proper concentrations of minerals within cells (and extracellular fluid), and removing toxins [12].

B. Beauty uses of Epsom salt

Epsom salt is use to remove dead skin and oil from your pores helping skin to look healthier and feel softer. Use this treatment on hands, feet, and everything in between, remove foot odor. Magnesium helps improve your skin’s overall appearance, reducing acne and other skin disorders by lowering cortisol levels, stabilizing hormonal imbalances, and improving cellular processes [13].

C. Gardening benefits of Epsom salts

Most plants need nutrients like magnesium and sulfur to stay in good health, and Epsom salt makes the primary nutrients in most plant foods (nitrogen, phosphorus, potassium) [14].

Magnesium sulfate crystals, when added to the soil, provide vital nutrients that helps in preventing yellowing leaves and the loss of green color (magnesium is an essential element in the chlorophyll molecule) in plants. As well as it removes unwanted insect pests, and prevent slugs among other things. Epsom salt is regularly recommended for tomatoes to prevent blossom end rot [15].

References


