Mini Review

BIOMEDICAL Journal of Scientific & Technical Research

ISSN: 2574 -1241

DOI: 10.26717/BJSTR.2019.19.003266

The Importance of KCl

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ARTICLE INFO

Received: June 21, 2019

Published: June 27, 2019

Citation: Hüseyin K, Cennet Canan K. The Importance of KCl. Biomed J Sci & Tech Res 19(2)-2019. BJSTR. MS.ID.003266.

ABSTRACT

Keywords: KCl; Health; Effect

Introduction

Potassium chloride (KCl) is a water-soluble compound that is generally used to prevent or treat severe potassium loss (Hypokalemia) or severe potassium loss of various etiologies. It is important to reduce the effects of KCl while prolonging its effect by using a suitable sustained release dosage form. Some of the structures where KCl is encapsulated have been developed in such a way that they are released over a long period of time [1]. The most popular materials used as carriers are ethyl-cellulose, hydroxypropyl cellulose, cellulose nitrate, cellulose acetate phthalate, magnesium stearate and microcrystalline cellulose [1]. Furthermore, in recent years, there is a tendency to reduce sodium in foods due to its relationship with hypertension. However, removal or reduction of salt can affect food shortening and microbiological safety. Potassium chloride (KCl) is the most obvious compound that can replace salt (NaCl) in food products. It revealed that KCl had a significantly greater effect than NaCl [2].

KCl is considered safe and exhibits an antimicrobial activity comparable to NaCl. In addition, the effect of KCl and NaCl replacement on proteolysis and in the production of soppressata molisana, KCl has been shown to decrease the formation of biogenic amines and to increase the development of proteolysis and sensory properties. However, despite the beneficial effects and functions of potassium in the body, increased potassium intake may have adverse health effects, particularly hyperkalemia in sensitive groups, but these cases have not been reported in healthy individuals [3]. As described initially in red blood cells (RBCs), KCl co-transport takes place by cell swelling and electro-neural simportation of K^+ and Cl^- along the plasma membrane that can be activated with sulfhydryl alkylating reagent N-ethylmaleimide. KCl co-transport is necessary for regulating cell volume, transepithelial ion transport and maintaining intracellular Cl^- concentrations. KCl co-transport plays an important role in the ionic and osmotic homeostasis of RBC and epithelial cells [4].

While KCl effectively reduces the amount of salt in foods up to 25%; it is the most commonly used compound to help maintain salt taste [5]. Potassium is used to produce the electrical charge that will allow the cells to function properly in the body. It helps the heartbeat to be regular. It acts to induce insulin release from the pancreas and, more importantly, to keep blood pressure under control. Potassium is one of the three most important minerals that should be taken as useful. Similar to sodium mineral, potassium helps the central nervous system and muscles by keeping the pH ratio in the body. Potassium chloride is the most commonly used salt compound to reduce sodium chloride levels in different processed foods. Increasing the potassium intake by 30-45 mmol d/1 recommended against the average intake of 72 mmol of the USA; reducing mortality from osteoporosis, diabetes and cardiovascular diseases has been shown to result in many health benefits, including kidney disease prevention, kidney stone formation, blood pressure reduction, urinary calcium excretion [6].

As a result;

a) KCl; bile salt is used to replace or stop the heart (heart surgery or needle operated),

b) Nerve and muscle activities, water balance,

c) In high doses, it causes a decrease in blood pressure and cardiac arrhythmia,

d) The excretion is controlled by the kidney pathway and the aldosterone hormone,

e) Reduces biofilm and protease formation in bacteria [7-8].

References

1. Shaki H, Farahania EV, Shojaosadatia SA, Ganjia F (2014) Optimizing Formulation Variables of KCl Loaded Waxy Microspheres. Iran J Pharm Sci 10(1): 37-54.
2. Zarei M, Khezizadeh M, Kazemipour S, Hesami G, Bemani E, et al. (2012) Growth and Cell Morphology of Listeria monocytogenes as Affected by Various Concentrations of NaCl and KCl. J Appl Biol Sci 6(16): 99-104.
3. Tremonte P, Gambacorta G, Pannella G, Trani A, Succi M, et al. (2018) NaCl Replacement with KCl Affects Lipolysis, Microbiological and Sensorial Features of Soppressata Molisana. Eur J Lipid Sci Tech 120(6): 1700449.
4. Chen YF, Chou CY, Ellory JC, Shen MR (2010) The emerging role of KCl co transport in tumor Biology. Am J Trans Res 2(4): 345-355.
5. Gandhi A, Cui Y, Zhou M, Shah NP (2014) Effect of KCl substitution on bacterial viability of Escherichia coli (ATCC 25922) and selected probiotics. J Dairy Sci 97(10): 5939-5951.
6. Kamleh R, Olabi A, Toufeili I, Daroub H, Younisa T, et al. (2014) The effect of partial substitution of NaCl with KCl on the physicochemical, microbiological and sensory properties of Akkawi cheese. Soc Chemical Industry 95(9): 1940-1948.
7. Karaderi CC, Kahraman H (2018) Effect of KCl on Biofilm Formation. Int J Biochem Physiol 3(4) 000135.
8. Karaderi CC, Kahraman H (2018) Effects of KCl (rpm/Heat) on Bacterial Protease Production in E. coli, P. aeruginosa and E. faecalis. Arch Biotechnol Biomed 2: 12-17.

ISSN: 2574-1241

DOI: 10.26717/BJSTR.2019.19.003266

Hüseyin Kahraman. Biomed J Sci & Tech Res

Submission Link: https://biomedres.us/submit-manuscript.php