



Analysis Of Some Commonly Used Fast Food For Sodium And Potassium Contents

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Abstract: Aim of this study was to determine selected macronutrients (sodium and potassium) and their ratio in different types of fast foods, using Flame Photometer. The selected samples were noodles, pasta, buns, sliced bread, salted biscuit and chips. All the samples were weighed and dried in hot air oven, digested and analyzed for sodium and potassium. The highest level of sodium was found in salted biscuits and potassium in noodles and both the observed nutrients were within the permissible limits set by World Health Organization. The observed samples contain more sodium and less potassium, therefore they had low potassium to sodium ratio and this indicates the samples are not healthy kind of food.

Index Terms - fast food, sodium, potassium, permissible limit

I. INTRODUCTION

Fast food or junk food is a term for food that is of little nutritional value and often high in fat, sugar, salt, and calories. Fast food can have a detrimental effect on levels of energy and mental well-being. Consumption of large quantities of fast food is associated with a drastic reduction in the consumption of nutritious foods such as milk, fruits and vegetables. High revenues, rapid urbanization, free home delivery, mouth-watering commercials and foreign cuisines have led to growing trend in the consumption of junk food (Subedi et al, 2020).

Sodium (Na) and potassium (K) are essential nutrients that serve many physiological functions, including the maintenance of plasma volume, osmolality and resting membrane potential (Cook et al, 2020; Staruschenko, 2018). Despite their opposing action, Na and K are intricately related to blood pressure (BP), kidney function and cardiovascular health (Whelton and He, 2014). Clinical trials and epidemiological studies have shown that high sodium intake is associated with an increased risk of cardiovascular disease (CVD) and stroke (Strazzullo et al, 2009).

The aim of this study is to determine level of sodium and potassium and their ratio in fast food samples using Flame Photometer.

II. MATERIAL AND METHODS

Sample collection and preparation: Samples were purchased from local grocers at Raipur. Each samples were taken from three different makes/companies i.e. three different noodle's samples, three different pasta's samples, three different bun's samples, three different bread's samples, three different plain salted biscuit's samples and three different plain salted potato chip's samples (total 18 samples). Prior to all chemical analyses, the samples were oven dried at 70°C for 2-4 hrs and each sample was powdered separately and 1.0 gm of sample was taken in conical flasks. Samples were digested with wet acid digestion method; cool the mixture up to room temperature, diluted up to 100 ml with de-ionized water. The final solution was then filtered through Whatman filter paper (number 42). The clear solution was used for further analysis. Standard solutions were prepared from NaCl and KCl. Working solutions of 60, 40 and 20 ppm were prepared for the

instrument calibration. Flame photometer was set up the for Na & K analysis as outlined in its instruction manual.

III. RESULT AND DISCUSSION

Moisture and dry matter composition of samples were determined using standard methods (AOAC, 1990).

Table1: Moisture content (%) and dry matter (%) of selected junk foods

SN	Samples	Moisture %	Dry Matter %
1.	Noodles	00.39	99.61
2.	Pasta	00.76	99.24
3.	Bun bread	20.41	79.59
4.	Bread	23.92	76.08
5.	Biscuit	02.03	97.97
6.	Chips	00.61	99.39

Average moisture content and dry matter of the evaluated food samples are shown in Table 1. The highest percentage of moisture content was observed in sliced bread. Dry matter refers to material remaining after removal of water and the moisture content reflects the amount of water present in the food ingredient. Dry matter is an indicator of the amount of nutrients that are available in a particular food. Highest dry matter % was observed in noodles.

Recommended Daily Allowance (RDA) for Potassium is 4,700 mg or 4.7 gm for both men and women (WHO, 2012). It is clear from potassium values (gm/100gm) that 100gm of these junk foods contain very minute amount of potassium and therefore the limited intake of these food has no harm for human health. The pattern for potassium in the selected samples was Noodles > Pasta > Bread > Biscuit > Buns > Chips.

Table 2: Average concentration of potassium and sodium (mg/kg and gm/100gm) in selected fast foods

SN	Samples	Potassium (mg/kg)	Potassium (gm/100gm)	Sodium (mg/kg)	Sodium (gm/100gm)	K/Na Ratio
1.	Noodles	40.2	0.00402	83.1	0.00831	0.48
2.	Pasta	20.2	0.00202	04.3	0.00043	4.69
3.	Bun	16.1	0.00161	77.9	0.00779	0.20
4.	Bread	19.7	0.00197	88.6	0.00886	0.22
5.	Biscuit	17.6	0.00176	95.4	0.00954	0.18
6.	Chips	09.6	0.00096	53.9	0.00539	0.17

The World Health Organization (2012) recommends that adults should consume less than 2,000 mg of sodium, equivalent to 5 grams of salt per day (Powles et al., 2013). It is clear from the values of sodium (gm/100gm) that these junk foods contain very minute amount of sodium but higher than potassium with the exception of sample pasta.

Potassium to sodium ratio is very important tool that can help in choosing healthy food ingredients for healthy dieting. The entire selected samples showed more sodium than potassium. Saupi et al., (2009) stated that the high ratio of K/Na in any food is an important factor in prevention of hypertension arteriosclerosis, with potassium depresses and Na enhances blood pressure (Saupi et al., 2009). The ideal ratio of sodium to potassium intake is roughly 1:3 that is; potassium intake would ideally be around three times our sodium intake. High intake of salt is associated with hypertension (Johnson et al., 2012)

Conclusion

The results of this study show that the values of sodium and potassium that 100gm of these fast foods contain very minute amount of sodium and potassium and therefore the limited intake of these is safe for human health. It is clear from the study that foods like salted biscuits and sliced bread have high sodium in comparison to other samples. Consuming these foods daily that are rich in sodium will lead to increased levels of sodium in body leading to hypernatremia. The samples have more sodium than potassium and this indicates the samples cannot be included in healthy category of food.

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