

Potassium, phosphorus and sodium content of commercially available soups: Implications for patients with chronic kidney disease

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Introduction

- In patients with chronic kidney disease (CKD), consumption of high amounts of potassium (K), phosphorus (P) and sodium (Na) can lead to hyperkalemia, hyperphosphatemia and hypertension, increasing the risk of cardiovascular disease and mortality.
- Patients with CKD are therefore advised to limit their dietary intake of K, P and Na as part of their renal diet.
- K, P and Na are frequently added to foods in the form of food additives which are included on the ingredient list and which contribute to the K, P and Na content of the foods.
- The content of K and P (mg per serving) may not always be present on the Nutrition Facts table, making it difficult for patients to make appropriate choices when buying foods such as soups.

Objective

- Describe the prevalence of K, P and Na additives in commercially available soup products.
- Determine the association between the presence of these food additives and the K, P and Na content found on the Nutrition Facts table of commercially available soup products.
- Determine the association between the presence of K additives and the chemically analyzed content of K in commercially available soup products

Methods

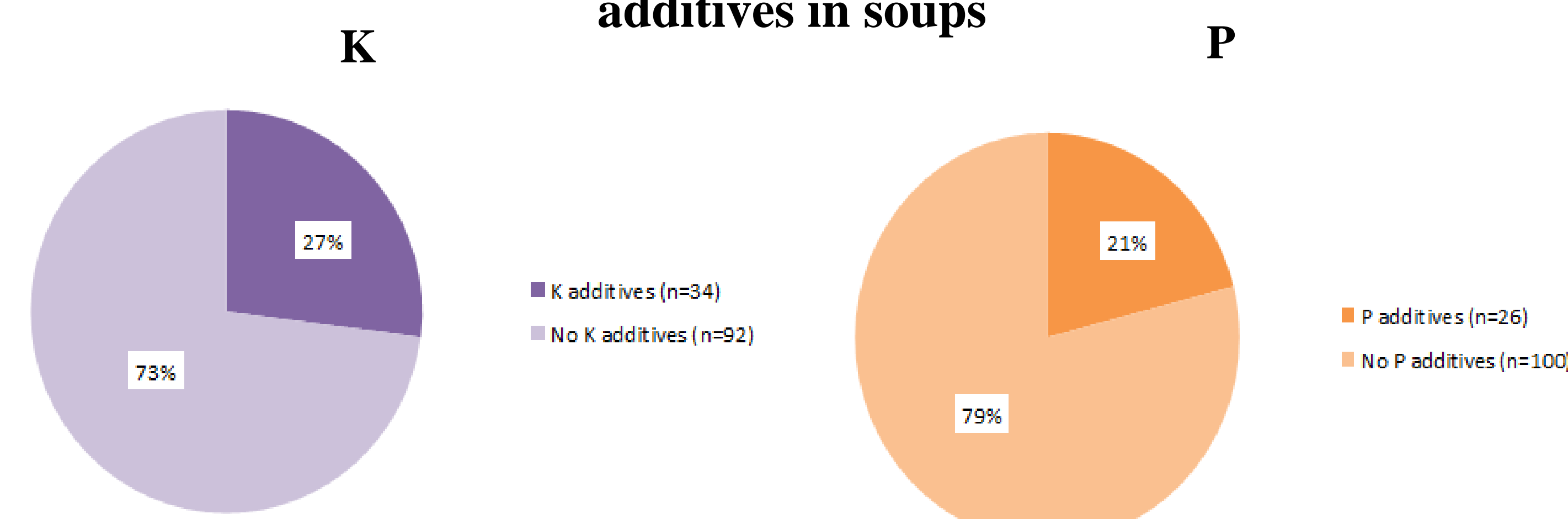
- All canned or boxed soup products sold at three top grocery stores by market share in Canada (Loblaws, Metro and Sobeys) were scanned.
- The nutritional information was collected from the Nutrition Facts table and the ingredients list using specified data collection forms and product label photographs.
- 11 soups with additives were purchased and matched with similar soup types without K additives (n=11) and were sent to Maxxam Analytics Mississauga Ontario for analysis of K content by AOAC official methods.
- Data was analysed using IBM SPSS Statistics 24.

Results

Table 1. Soup types

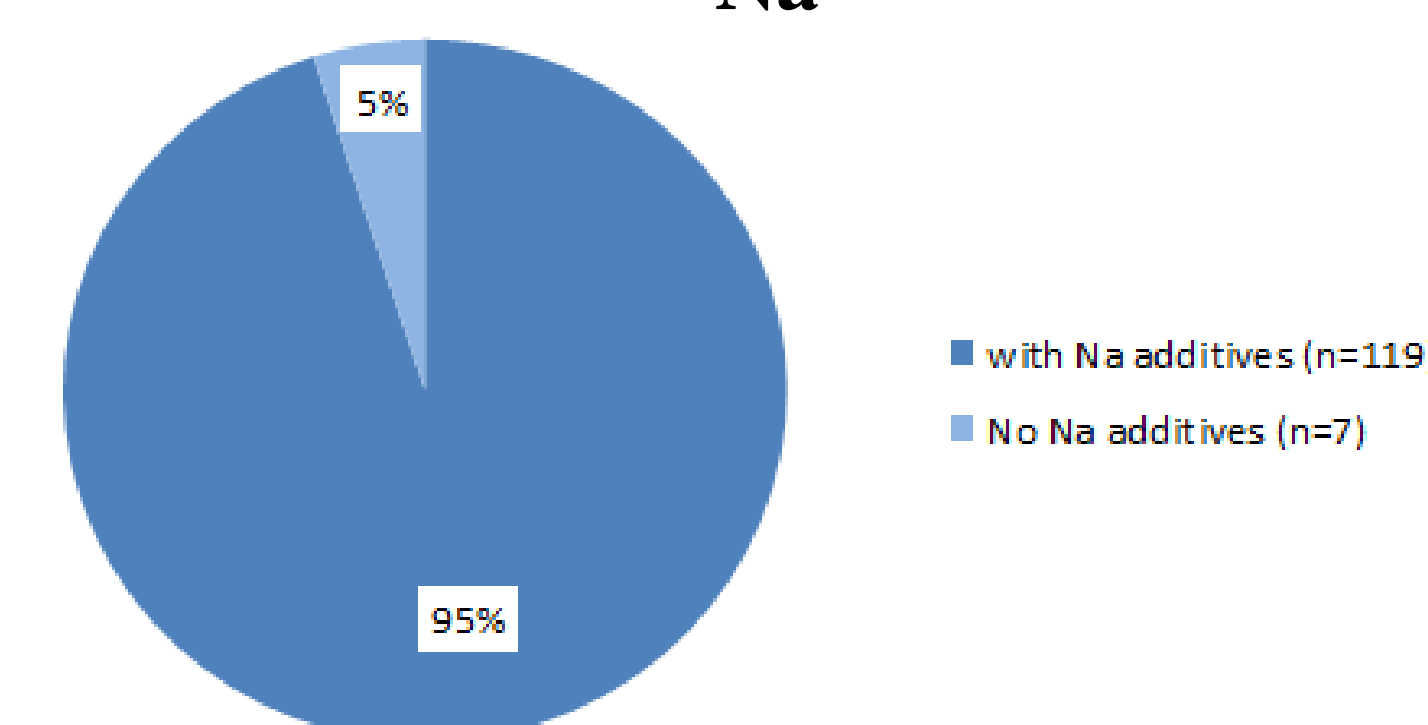
Soup Types	N	Soup Types	N
Bean and bacon	2	Cream of chicken	10
Beef broth	15	Cream of mushroom	9
Beef chili	1	Cream of potato	3
Beef/Beef and vegetable	15	Italian Wedding	1
Chicken and rice	8	Lentil/Bean	6
Chicken broth	13	Minestrone	2
Chicken noodle	15	Tomato	7
Clam chowder	6	Vegetable	8
Cream of celery	3	Vegetable broth	2

Figure 1. Prevalence of additives in soups



Nutrition Facts table	K additives (n=14)*	No K additives (n=30)*	p value	Nutrition Facts table	P additives (n=24)	No P additives (n=102)	p value
K mg/serving	350 ± 208	239 ± 209	0.1	P	P content was absent from all Nutrition Facts tables.		

Na



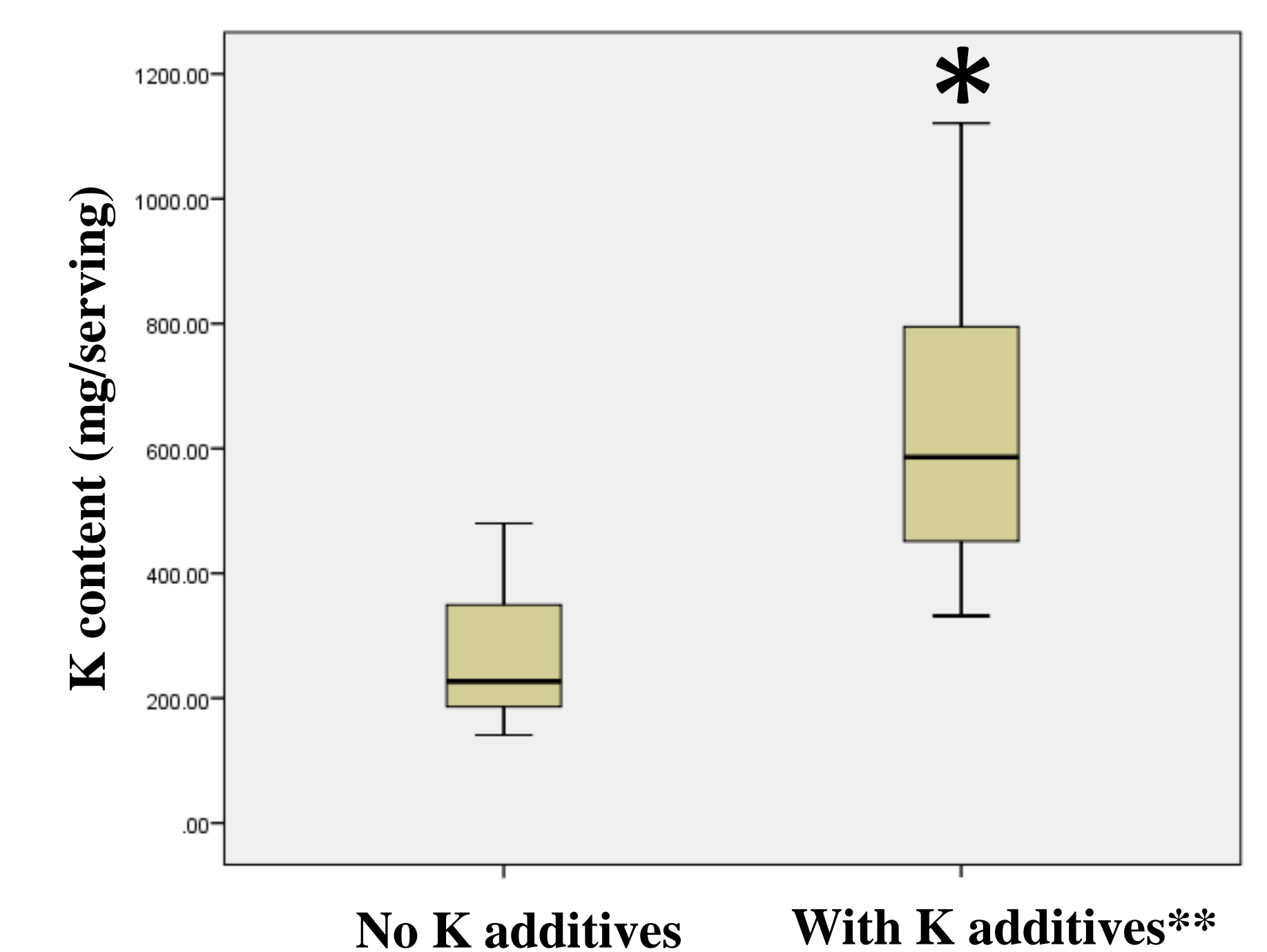
Nutrition Facts table	Na additives (n=119)	No Na additives (n=7)	p value
Na mg/serving	661 ± 173	41 ± 24	<0.001

Table 2. Soup types with and without K additives analysed for K content

Soup Types	K additives*	No K additives
Beef/Beef & barley	2	2
Chicken and rice	1	2
Chicken Noodle	5	3
Cream of mushroom	2	3
Lentil	1	1

*All K additives were KCl

Figure 2. Chemically analyzed K content of soups with and without K additives (n=22)



*p<0.001 by Mann-Whitney u test

**9/11 of soups with K additives did not have the K content listed on the Nutrition Facts table

Conclusion

- 1/5 of the soups have P additives, over a quarter of the soups have K additives, while almost all soups had Na additives.
- Soups with Na additives had 16 times more Na than those without Na additives.
- Based on the Nutrition Facts table, there was no association between the presence of K additives and K content of soups. However, chemically analysed K content was significantly associated with presence of K additive.
- P content was missing on all Nutrition Facts tables and more research is needed to determine the association of the presence of P additives and P content in commercially available soups.
- K content level cannot be inferred from the presence of K additives listed. Therefore, this study supports the eventual inclusion of K content on the Nutrition Facts table.