

Comprehensive Report on Potassium in Human Health

Chapter 1: Briefing Document on Potassium's Role in Health and Disease

1.0. Executive Summary

A critical public health paradox defines the role of potassium in modern diets: while essential for mitigating non-communicable diseases like hypertension, population-wide intake falls dangerously short of recommendations. This gap is largely due to the modern dietary shift towards processed foods high in sodium and low in potassium, a stark reversal of ancestral eating patterns. Adequate potassium intake is strongly linked to lower blood pressure, reduced risk of heart disease and stroke, and improved bone and muscle health. However, maintaining the body's potassium balance is crucial. While dietary deficiency is the primary population-level concern, clinically significant imbalances such as hypokalemia (low potassium) and hyperkalemia (high potassium) pose serious health risks. Individuals with chronic kidney disease are especially vulnerable to hyperkalemia, as their ability to excrete excess potassium is impaired, transforming a beneficial nutrient into a potential hazard. Therefore, public health strategies must focus on safely increasing dietary potassium in the general population while providing targeted guidance for at-risk groups.

1.1. The Potassium Paradox: Essential Nutrient, Widespread Deficiency

Potassium is a fundamental mineral and electrolyte, indispensable for the proper function of every cell in the human body. It plays a critical role in nerve signaling, muscle contraction, and fluid balance. Despite its importance, a vast majority of individuals in many parts of the world, especially those consuming modern Western diets, do not meet recommended intake levels. This widespread dietary shortfall represents a major public health challenge. Understanding the reasons for this gap—and its physiological consequences—is a strategic imperative for addressing prevalent chronic conditions, most notably hypertension.

Official Recommendations and Public Perception

Global and national health organizations have established clear guidelines for potassium intake. The World Health Organization (WHO) provides a broad strategic guideline that recommends increasing potassium consumption to reduce the risk of non-communicable diseases. In the United States, specific daily values have been set: the Food and Drug Administration (FDA) has established the Daily Value at 4,700 mg, while the National Academies of Sciences, Engineering, and Medicine (NASEM) recommends an adequate intake of 2,600 mg for adult females and 3,400 mg for adult males.

From a public perspective, these targets often seem daunting or even impossible to achieve through diet alone. As captured in public discussions, a common sentiment is that meeting a goal like 4,700 mg would require consuming an unrealistic volume of food, such as having to eat "10 bananas or 8 potatoes a day." This perception highlights a significant disconnect between dietary guidelines and the practical realities of the modern food environment, where processed, potassium-poor foods are ubiquitous.

The Shift in Modern Diets

The current imbalance is a relatively recent phenomenon in human history. For thousands of years, ancestral or "Paleolithic" diets were abundant in potassium-rich plant foods like fruits, vegetables, and tubers, while sodium was scarce. This resulted in a diet that delivered



approximately 16 times more potassium than sodium. The modern diet has inverted this ratio. The prevalence of processed and prepared foods has dramatically increased sodium intake while simultaneously reducing the consumption of whole, potassium-rich plant foods. This dietary shift is considered a major contributor to the high rates of hypertension seen today, as the evolutionarily established balance between these two critical electrolytes has been profoundly disrupted.

While this dietary shift presents a public health challenge, overcoming it unlocks a host of powerful, evidence-backed health benefits.

1.2. The Health Imperative: Benefits of Adequate Potassium Intake

Increasing dietary potassium is a powerful, proactive, and non-pharmacological strategy for mitigating the risk of major chronic diseases. The health benefits are not speculative; they are supported by a growing body of scientific evidence demonstrating potassium's integral role in maintaining cardiovascular, renal, and musculoskeletal health. Analyzing this evidence reveals a clear imperative for public health initiatives aimed at improving potassium intake across the population.

- **Cardiovascular Health and Blood Pressure Regulation:** Perhaps the most well-documented benefit of adequate potassium intake is its effect on the cardiovascular system. Potassium helps lower blood pressure through two primary mechanisms. First, it aids the kidneys in excreting excess sodium from the body, a key factor in managing hypertension. Second, it helps relax the walls of blood vessels, reducing tension and promoting healthier blood flow. The WHO strongly recommends increased potassium intake as a measure to reduce blood pressure and the associated risks of heart disease and stroke.
- **Kidney and Fluid Balance:** As the primary intracellular electrolyte, potassium is fundamental to regulating the body's fluid balance. It works in opposition to sodium, the main extracellular electrolyte, to control the amount of water inside and outside of cells. This homeostatic function is critical for overall health and particularly for the kidneys, which are responsible for filtering waste and balancing electrolytes. Adequate potassium intake may also help prevent the formation of kidney stones by reducing the amount of calcium lost in the urine.
- **Musculoskeletal Health:** Emerging evidence highlights potassium's role in maintaining both bone and muscle integrity, with notable sex-specific effects. One prominent theory related to bone is the "acid-base hypothesis," which posits that alkaline potassium salts from fruits and vegetables help neutralize the acid load produced by diets high in meats and grains. This buffering effect may prevent the body from leaching alkaline salts (like calcium) from bone to maintain pH balance, thereby reducing bone resorption and the risk of osteoporosis. Supporting this, a study using data from the Korean National Health and Nutrition Examination Survey (KNHANES) found that higher potassium intake was associated with higher **bone mineral density in postmenopausal women**. For muscle health, a separate KNHANES study found that higher potassium intake was associated with lower odds of having **low skeletal muscle mass in men**; this association was not significant in women after adjusting for total energy intake.



- **Nervous System and Muscle Function:** At the most basic cellular level, potassium is essential for generating the electrical nerve impulses that allow the brain to communicate with the rest of the body. The movement of positively charged potassium ions across cell membranes creates the electrical potential needed for nerve signaling. This process is vital for regulating muscle contractions, maintaining a regular heartbeat, and ensuring proper reflex function.

These extensive benefits highlight the imperative of achieving adequate potassium levels, but they also throw into sharp relief the clinical dangers that arise when this delicate balance is disrupted.

1.3. The Risks of Imbalance: Hypokalemia and Hyperkalemia

Maintaining potassium homeostasis—a stable concentration in the blood—is critical for health. While inadequate dietary intake is a widespread public health concern, clinically significant imbalances where blood potassium levels are either too low (hypokalemia) or too high (hyperkalemia) can pose immediate and serious health risks. Understanding the causes and symptoms of these conditions is essential for proper medical management.

Condition	Definition (Blood Level)	Primary Causes	Key Symptoms/Risks
Hypokalemia (Low Potassium)	Below 3.5 mmol/L	Chronic diarrhea or vomiting, overuse of diuretics or laxatives, eating disorders, certain kidney disorders, low magnesium levels.	Weakness and fatigue, muscle cramps, digestive problems (bloating, constipation), abnormal heart rhythms (arrhythmia), persistent tingling and numbness.
Hyperkalemia (High Potassium)	Above 5.5 mmol/L; levels >6.5 mmol/L are considered a medical emergency.	Chronic kidney disease (most common cause) , certain medications (e.g., some blood pressure drugs), a high-potassium diet combined with supplements, Addison's disease.	Often asymptomatic in mild cases. Severe symptoms can include chest pain, heart palpitations, arrhythmia, muscle weakness or numbness, nausea, and abdominal pain. Can lead to a heart attack.

The Critical Role of Kidney Function

The kidneys are the primary regulators of the body's potassium levels. In a person with healthy kidney function, the body can easily excrete any excess potassium consumed from food through urine. This efficient regulatory system is why it is very difficult for a healthy individual to develop hyperkalemia from diet alone. However, in individuals with **chronic kidney disease (CKD)**, this mechanism is compromised. Damaged kidneys cannot effectively filter and remove excess potassium from the blood, causing it to accumulate. For this reason, individuals with CKD are uniquely susceptible to developing dangerous hyperkalemia, and they are often advised to follow a low-potassium diet. This reciprocal relationship—where kidney health dictates potassium



balance and potassium balance can affect kidney health—is central to understanding the nuances of potassium's role in the body.

The interplay between the kidneys and potassium is deeply connected to another critical mineral: sodium.

1.4. Key Interactions and Nuances

The physiological effect of potassium is not an isolated phenomenon. Its impact is heavily influenced by its interaction with other minerals, particularly sodium, as well as an individual's overall health status and medication use. A nuanced understanding of these interactions is critical for developing effective and safe public health recommendations.

The Sodium-Potassium Axis

Sodium and potassium have a reciprocal relationship that is fundamental to cardiovascular health. The modern diet, characterized by its high-sodium, low-potassium profile, disrupts a delicate balance that the human body evolved to expect. Physiologically, adequate potassium intake is a key mechanism for promoting the excretion of excess sodium through the kidneys. When potassium is low and sodium is high, the body retains more sodium, contributing to fluid retention and elevated blood pressure. Restoring a healthier ratio, by both reducing sodium and increasing potassium, is a cornerstone of dietary strategies to manage hypertension.

The U-Shaped Dose-Response Curve

While increasing potassium is beneficial for most, a 2020 meta-analysis of randomized controlled trials revealed that the relationship between potassium intake and blood pressure is not linear. Instead, it follows a **U-shaped curve**. This means that while potassium supplementation effectively lowers blood pressure at moderate doses, the beneficial effect weakens at higher doses. More importantly, at very high levels of intake (above a difference of approximately 80 mmol/day), the effect can even reverse, leading to a slight *increase* in blood pressure. This adverse effect was particularly noted in participants already being treated with antihypertensive medications. The key takeaway is that more is not always better, and excessive supplementation should be avoided.

Considerations for Supplementation

The potential risks of excessive potassium intake are the primary reason why over-the-counter (OTC) potassium supplements in the U.S. are limited to a low dose of 99 mg. High doses taken at once can damage the lining of the gut and, more critically, can cause a rapid spike in blood potassium levels that may lead to dangerous heart arrhythmias. High-dose supplements should only be used under strict medical supervision for a diagnosed deficiency. An alternative method for increasing potassium intake is the use of "salt substitutes," which are made from potassium chloride instead of sodium chloride. While effective, they carry the same risks as supplements for vulnerable populations, especially those with impaired kidney function.

Ultimately, addressing the potassium paradox requires a two-pronged public health strategy: promoting whole-food dietary patterns for the general population while implementing targeted screening and cautious guidance for individuals with compromised kidney function.



Chapter 2: Study Guide for Understanding Potassium**2.0. Introduction**

Welcome to this study guide. As a research assistant and tutor in public health nutrition, I've designed this guide to help you test and deepen your understanding of the critical role potassium plays in human health. We will cover its core physiological functions, key dietary considerations, and the clinical implications of potassium imbalance. By working through these questions, you will build a robust and nuanced knowledge base on this essential mineral.

2.1. Knowledge Review Quiz

1. What are the two primary ways that adequate potassium intake helps lower blood pressure?
2. Define hyperkalemia and identify the single most common cause of this condition.
3. Explain the "reciprocal relationship" between the kidneys and potassium.
4. Why are over-the-counter potassium supplements in the U.S. typically limited to a low dose of 99 mg?
5. Describe the "acid-base hypothesis" as it relates to potassium intake and bone health.
6. What is hypokalemic nephropathy and what are its primary characteristics?
7. According to the 2020 meta-analysis, what is the "U-shaped relationship" between potassium intake and blood pressure?
8. What is the fundamental role of potassium as an electrolyte in the nervous system?
9. List five distinct types of foods that are excellent sources of dietary potassium.
10. How does the typical modern Western diet differ from ancestral diets in terms of sodium and potassium content?

2.2. Answer Key

1. Adequate potassium intake helps lower blood pressure first by helping the kidneys excrete excess sodium through urine. Second, potassium helps the walls of blood vessels relax, which reduces tension and can lead to lower blood pressure.
2. Hyperkalemia is the medical condition for high potassium levels in the blood, defined as a level above 5.5 mmol/L. The single most common cause of hyperkalemia is chronic kidney disease, as damaged kidneys are unable to effectively filter and remove excess potassium from the body.
3. The "reciprocal relationship" means that the kidneys regulate potassium balance, but potassium also affects kidney function. Healthy kidneys are essential for excreting excess potassium to prevent hyperkalemia. Conversely, chronic low potassium (hypokalemia) can lead to a form of kidney injury known as hypokalemic nephropathy.
4. OTC potassium supplements are limited to 99 mg because high doses taken at once can pose significant health risks. These risks include damaging the lining of the gut and



causing a rapid spike in blood potassium that can lead to life-threatening heart arrhythmias.

5. The "acid-base hypothesis" suggests that alkaline potassium salts from fruits and vegetables help neutralize the low-grade metabolic acidosis caused by modern diets high in meats and grains. This buffering action may prevent the body from leaching alkaline minerals like calcium from bones to maintain pH balance, thus preserving bone mineral density and reducing the risk of osteoporosis.
6. Hypokalemic nephropathy is a form of kidney injury caused by chronic potassium deficiency. Its characteristics can include chronic interstitial nephritis, tubular degeneration (vacuolar degeneration), and fibrosis, and it can progress to kidney failure.
7. The "U-shaped relationship" describes the finding that the blood-pressure-lowering effect of potassium supplementation is strongest at moderate doses but weakens at higher doses. At very high intake levels, the effect can even reverse and cause an increase in blood pressure, particularly in individuals on antihypertensive medication.
8. Potassium is essential for generating nerve impulses. The movement of positively charged potassium ions out of nerve cells (and sodium ions in) changes the cell's voltage, which activates a nerve signal. This process is fundamental for muscle contractions, reflexes, and heartbeat regulation.
9. Five excellent sources of dietary potassium are: fruits (bananas, oranges, apricots), vegetables (cooked spinach, potatoes, squash), legumes (lentils, kidney beans, soybeans), certain dairy products (milk, yogurt), and some fish (salmon, tuna).
10. Ancestral diets were high in potassium and low in sodium, with about 16 times more potassium than sodium. The modern Western diet has inverted this ratio, delivering about twice as much sodium as potassium due to the high consumption of processed foods.

2.3. Essay and Critical Thinking Questions

1. Critique the modern food environment in the context of potassium intake. Analyze the challenges an average person faces in meeting the recommended 4,700 mg/day and propose three evidence-based strategies (dietary or policy-level) to help bridge this gap.
2. A patient with chronic kidney disease (CKD) and a patient with hypertension (but healthy kidneys) both ask for advice on potassium. Using the source material, contrast the advice you would give to each, explaining the physiological reasoning behind the different recommendations.
3. Discuss the sex-specific differences in potassium's effects on the body, referencing the findings related to both skeletal muscle mass and bone mineral density from the KNHANES studies.
4. Analyze the risks versus benefits of using potassium-based salt substitutes as a public health strategy to combat hypertension. What are the potential advantages for the general population and the specific risks for certain subgroups?
5. Explain the concept of the sodium-potassium pump and its importance in maintaining fluid balance, nerve function, and cardiovascular health. How has the modern diet disrupted this evolutionarily ancient system?



2.4. Glossary of Key Terms

Term	Definition
Electrolyte	A mineral that dissolves in body fluids to form positively or negatively charged ions, which can conduct electricity and are essential for processes like fluid balance and nerve signaling.
Hyperkalemia	A medical condition in which the potassium level in the blood is too high, typically defined as a concentration above 5.5 mmol/L.
Hypokalemia	A medical condition in which the potassium level in the blood is too low, typically defined as a concentration below 3.5 mmol/L.
Hypokalemic Nephropathy	A form of progressive kidney disease and injury caused by chronic, long-term potassium deficiency.
Chronic Kidney Disease (CKD)	A condition characterized by the gradual loss of kidney function over time, which impairs the ability to filter waste and excess electrolytes like potassium from the blood.
Sodium-Chloride Cotransporter (NCC)	A protein in the kidney's distal convoluted tubule that reabsorbs sodium and chloride. Its activity is influenced by potassium levels, linking potassium balance to salt sensitivity and blood pressure.
Osteoporosis	A condition characterized by low bone mass and reduced bone structure, making bones brittle, fragile, and more vulnerable to fracture.
Bone Mineral Density (BMD)	A measurement of the amount of minerals (mostly calcium and phosphorous) contained in a certain volume of bone, used as an indicator of bone strength.
Dose-Response Relationship	A relationship in which a change in the amount, intensity, or duration of an exposure is associated with a change in the risk or severity of a specific outcome.
Salt Substitute	A product used to season food that contains potassium chloride instead of or in combination with sodium chloride.

Chapter 3: Frequently Asked Questions (FAQs) About Potassium

This section addresses ten of the most common and important questions about potassium. The goal is to provide clear, evidence-based answers to help demystify this essential nutrient for a non-specialist audience.

- 1. **Why is the recommended daily intake for potassium so high (e.g., 4,700 mg), and is it really necessary to get that much?** The recommended intake is high because evidence shows that consuming this amount is linked to significant health benefits, especially for



cardiovascular health. This level helps lower blood pressure, reduce the risk of stroke, and counteract the high sodium content of modern diets. While many people don't reach this target, getting closer to it is beneficial. The recommendations reflect the high-potassium, low-sodium diet that humans evolved with.

2. **What are the best and most practical food sources to increase my potassium intake without eating an excessive amount of food?** Focus on nutrient-dense foods. Excellent sources include potatoes and sweet potatoes (with skin, which contains about 25% of the potassium), legumes like lentils and kidney beans, *cooked* spinach, acorn squash, and avocados. Dried fruits like apricots and prunes are very high in potassium but also in sugar. Low-sodium V8 juice and tomato paste are also concentrated sources. The key is to incorporate a variety of these whole foods into your daily meals.
3. **Is it dangerous to take potassium supplements from the store?** Over-the-counter (OTC) supplements are generally safe for healthy individuals because they are limited by law to a low dose (99 mg), which is not an effective way to meet daily needs. Taking high-dose supplements without a doctor's prescription can be dangerous, as it can cause gut damage or a rapid, unsafe spike in blood potassium levels. Research also shows a "U-shaped" relationship between potassium intake and blood pressure, meaning that while moderate doses help, excessive intake can be counterproductive. High-dose supplementation should only be done under medical supervision.
4. **I have high blood pressure. Will eating more potassium really help?** Yes, for most people, it can. Numerous studies show that increasing dietary potassium is an effective way to help lower blood pressure. Potassium helps your kidneys flush excess sodium out of your body and also helps relax your blood vessel walls. This strategy is a key component of dietary plans like the DASH (Dietary Approaches to Stop Hypertension) diet.
5. **Can you get too much potassium from food alone?** For a person with healthy kidney function, it is extremely difficult and rare to get a dangerous amount of potassium from food alone. Your kidneys are very efficient at filtering out and excreting any excess potassium you consume. The risk of high potassium (hyperkalemia) from diet primarily exists for individuals with chronic kidney disease or those taking certain medications that affect potassium excretion.
6. **What's more important: decreasing my sodium or increasing my potassium?** Both are critically important, and they work together. The health benefits are greatest when you do both simultaneously, as this restores the natural sodium-to-potassium ratio your body is designed for. Reducing high sodium intake is crucial for lowering blood pressure, while increasing potassium helps accelerate sodium removal and provides its own direct benefits to the cardiovascular system.
7. **What are the first signs that my potassium levels might be too low or too high?** Mild imbalances often have no symptoms. For **low potassium (hypokalemia)**, early signs can include weakness, fatigue, muscle cramps, and constipation. For **high potassium (hyperkalemia)**, mild cases are often asymptomatic, but symptoms can include abdominal pain, nausea, muscle weakness, or numbness. Because severe imbalances can cause life-threatening heart issues, any concerning symptoms like heart palpitations or chest pain warrant immediate medical attention.



8. **Does potassium affect bone strength and muscle mass?** Yes, evidence suggests it plays a supportive role with some sex-specific differences. For bone health, potassium-rich foods (fruits and vegetables) provide alkaline compounds that may neutralize dietary acid, preventing the body from pulling calcium from bones to maintain pH balance; this is linked to higher bone mineral density in **postmenopausal women**. For muscle health, studies have shown that higher potassium intake is associated with lower odds of having low skeletal muscle mass in **men**.
 9. **Are there certain medical conditions or medications that require me to be extra careful with my potassium intake?** Absolutely. The most significant condition is **chronic kidney disease (CKD)**. This is due to the "reciprocal relationship" between potassium and the kidneys: kidney function regulates potassium levels, and potassium levels affect kidney health. With CKD, impaired kidney function can lead to dangerous potassium buildup. Other conditions include Addison's disease and uncontrolled diabetes. Certain medications, especially potassium-sparing diuretics and some blood pressure drugs (like ACE inhibitors and ARBs), can also raise potassium levels. Always consult with a doctor if you have a chronic condition or are on medication.
 10. **I've heard of "salt substitutes." What are they, and are they a safe way to get more potassium?** Salt substitutes are products made with potassium chloride instead of sodium chloride. For the general population, they can be a safe and effective way to reduce sodium and increase potassium intake. However, they are essentially a high-dose potassium supplement and should be **avoided** by people with kidney disease or those on certain medications. The 2020 meta-analysis on blood pressure also identified a U-shaped dose response, suggesting "more is not always better" and that excessive intake can be counterproductive, so these should be used judiciously.
-
-

Chapter 4: Timeline of Evolving Knowledge on Potassium

Our scientific and public understanding of potassium is not static; it has evolved significantly over time. Early public health guidelines focused on its role in broad disease prevention, which later gave way to more nuanced research into dose-response relationships and its specific impacts on different body systems. This timeline charts key publications and data points from the source material to illustrate this progression.

- **2012: WHO Foundational Guidance** The World Health Organization (WHO) published its global, evidence-informed guideline on potassium intake. This foundational document positioned increased potassium consumption as a key global strategy for reducing non-communicable diseases (NCDs). It explicitly linked higher potassium intake to lower blood pressure and recommended its use in conjunction with sodium reduction guidelines to guide national public health policies.
- **Circa 2020-2023: Public Discourse and Practical Challenges** Online community discussions, such as those on the r/nutrition subreddit, provided a snapshot of public understanding and the practical hurdles of implementing dietary guidelines. These conversations highlighted widespread confusion and frustration regarding how to meet high daily value targets (e.g., 4,700 mg/day) through diet alone. This period reflects a



public grappling with the real-world application of scientific recommendations, leading to community-driven sharing of dietary strategies, food sources, and methods like using salt substitutes.

- **2020: Nuancing the Dose-Response Relationship** A dose-response meta-analysis published in the *Journal of the American Heart Association* provided a major refinement to our understanding of potassium's effect on blood pressure. Its key contribution was identifying a non-linear, **U-shaped relationship**. This research confirmed that potassium lowers blood pressure, but it also cautioned that the effect weakens at high doses and can even become counterproductive (raising blood pressure) with excessive supplementation, particularly in individuals on antihypertensive drugs. This marked a shift from "more is better" to a more precise, dose-dependent perspective.
- **2020: Investigating Musculoskeletal Impacts** Two separate studies using data from the Korean National Health and Nutrition Examination Survey (KNHANES) expanded the known benefits of potassium beyond cardiovascular health. One study discovered a link between higher potassium intake and greater **bone mineral density in postmenopausal women**, supporting the acid-base hypothesis of bone health. The other study found that higher potassium intake was associated with lower odds of having **low skeletal muscle mass in men**. Together, these findings highlighted sex-specific musculoskeletal benefits.
- **2022: Deepening the Understanding of Kidney Interactions** A review in *Pediatric Nephrology* titled "Potassium and the kidney" further clarified the complex, **"reciprocal relationship"** between the two. It detailed how potassium levels affect kidney health (e.g., hypokalemic nephropathy) and how kidney function, in turn, is the primary determinant of potassium balance. This work also highlighted the emergence of salt substitution as a promising but nuanced public health strategy that requires careful consideration in populations with kidney disease.

Chapter 5: List of Sources

The following list comprises the source documents used in the creation of this report. They are formatted in a standard scientific citation style to provide a reference for the data and to facilitate further reading on the topic.

1. World Health Organization. (2012, December 25). *Guideline: potassium intake for adults and children*. WHO/NMH/NHD/13.1.
2. Filippini, T., Naska, A., Kasdagli, M. I., Torres, D., Lopes, C., Carvalho, C., Moreira, P., Malavolti, M., Orsini, N., Whelton, P. K., & Vinceti, M. (2020). Potassium Intake and Blood Pressure: A Dose-Response Meta-Analysis of Randomized Controlled Trials. *Journal of the American Heart Association*, 9(12), e015719. <https://doi.org/10.1161/JAHA.119.015719>
3. Ha, J., Kim, S. A., Lim, K., & Shin, S. (2020). The association of potassium intake with bone mineral density and the prevalence of osteoporosis among older Korean adults. *Nutrition Research and Practice*, 14(1), 55–61. <https://doi.org/10.4162/nrp.2020.14.1.55>



4. Healthline Editorial Team. (2024, October 28). *What Potassium Does for Your Body: A Detailed Review*. Healthline.
5. Lee, Y. J., Lee, M., Wi, Y. M., Cho, S., & Kim, S. R. (2020). Potassium intake, skeletal muscle mass, and effect modification by sex: data from the 2008–2011 KNHANES. *Nutrition Journal*, 19, 93. <https://doi.org/10.1186/s12937-020-00614-z>
6. Marengo, K., Davidson, K., & Raman, R. (2024, June 27). *Symptoms of Low Potassium (Hypokalemia)*. Healthline.
7. Reddit Community Discussion. (c. 2022-2023). *How does anyone ever get 100% the daily value of potassium?*. r/nutrition subreddit.
8. Sachdev, P. (Ed.). (2023, November 9). *Potassium-Rich Foods*. WebMD.
9. Wieërs, M. L. A. J., Mulder, J., Rotmans, J. I., & Hoorn, E. J. (2022). Potassium and the kidney: a reciprocal relationship with clinical relevance. *Pediatric Nephrology*, 37(10), 2245–2254. <https://doi.org/10.1007/s00467-022-05494-5>
10. Cleveland Clinic. (2023, May 11). *Hyperkalemia (High Potassium)*.

This document can be inaccurate; please double check its content. For more information visit PowerBroadcasts.com

