

New Evidence Shakes up Perceptions of Salt

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(PhysOrg.com) -- As the 2010 Dietary Guidelines for Americans are currently under development and regulations surrounding sodium consumption are being considered, an analysis of evidence to be released online Thursday, Oct. 15, in the *Clinical Journal of the American Society of Nephrology (CJASN)* questions the scientific logic and feasibility of the decades-long effort to limit salt intake in humans.

After examining data from sodium intake studies worldwide and a critical body of neuroscience research on sodium appetite (innate behaviors that drive us to consume salt), researchers from the Department of Nutrition at the University of California, Davis, and the Department of Anatomy and Neurobiology at Washington University found compelling evidence indicating that humans naturally regulate their salt intake within a narrowly defined physiologic range.

This new analysis, "Can Sodium Intake Be Modified by Public Policy," is timely as two expert panels convened by the U.S. government are considering nutrition policies that would lower current sodium intake recommendations and set in

motion policies regulating the amount in food. The issue of whether sodium intake is a physiologic parameter that public policy cannot change has never before been considered. This study challenges the relevance of regulatory or legislative intervention by identifying evidence, which must be taken into account as U.S. guidelines are being reevaluated, and even more restrictive policies considered.

"If sodium intake is physiologically determined, then our national nutrition guidelines and policies must reflect that reality," said lead author David A. McCarron, an adjunct professor with the Department of Nutrition at UC Davis. "It is unrealistic to attempt to regulate America's sodium consumption through public policy when it appears that our bodies naturally dictate how much sodium we consume to maintain a physiologically set normal range. To do otherwise will expend valuable national and personal resources against unachievable goals."

Sodium consumption not extreme

The researchers evaluated 24-hour urinary sodium excretion, the standard measure of daily sodium intake, from 19,151 individuals collected in 62 previously published surveys from 33 countries worldwide. In contrast to the widely held notion that salt intake has reached extreme levels in Western societies, the analysis indicates that daily sodium intake across a wide range of "food environments" tracks within a relatively narrow range: 117 mmol-212 mmol (2,700-4,900 mg). In addition, previous studies provide supportive evidence that adult humans naturally seek this range of sodium intake.

Further, the authors highlight neuroscience research in animal models demonstrating that sodium intake is tightly controlled by critical pathways in the brain to maintain optimal function of many physiologic functions.

“Decades of neuroscience research have revealed highly sophisticated brain circuits which regulate sodium appetite by facilitating communications between the brain and multiple organs throughout the body,” said study co-author Joel C. Geerling, a neuroscientist and physician formerly of Washington University and now at New York-Presbyterian Hospital/Columbia University Medical Center.

“One purpose of these pathways is to ensure that the body is obtaining adequate sodium from the diet to fulfill physiologic needs.” Geerling said.

than the lowest level of worldwide sodium intake (2,700 mg) and 38 percent lower than the worldwide average sodium intake (3,700 mg).

According to study co-author Judith Stern, professor of nutrition at UC Davis and a past member of the 1985 Dietary Guidelines Advisory Committee, “If this body of evidence is not taken into account, updates to the Dietary Guidelines or regulatory actions are based on partial science. Clearly, before dietary [sodium intake](#) can or should be modified, additional discussion and analysis are required.”

The importance of the question posed by this article is further highlighted by the efforts of national agencies and municipal departments, such as the British Food Standards Agency (FSA) and the New York City Department of Health, which have set in motion campaigns to mandate food companies and restaurants to lower the sodium content of foods. Provided by UC Davis ([news](#) : [web](#))

In the course of their analysis and included in this article, the UC Davis investigators statistically assessed government-sponsored surveys of 24-hour urinary sodium excretion completed at 13 sites within the United Kingdom and Ireland involving more than 6,000 subjects since 1982. This assessment indicates that there has been no change during the past 25 years in the dietary sodium intake of individuals living in the U.K. and Ireland and is at odds with FSA’s recent public claims of a significant reduction following that agency’s multimillion pound campaign to restrict salt intake in the U.K.

Is regulation necessary?

The 2010 Dietary Guidelines Advisory Committee and an Institute of Medicine (IOM) Panel on Strategies to Reduce Sodium Intake are working to determine what the 2010 sodium intake guideline will be and how to implement strategies — including regulatory and legislative actions — to further lower Americans’ sodium intake.

However, the current daily intake guidelines call for a maximum daily intake of 2,300 mg of sodium, the equivalent of one teaspoon of table [salt](#). These recommendations are already 17 percent lower

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