Media contact: Leslie Stein, 267.519.4707 or stein@monell.org

Early Dietary Experience Shapes Salt Preference of Infants and Preschoolers

PHILADELPHIA (December 20, 2011) -- Researchers from the Monell Center report that 6-month-old infants who have been introduced to starchy table foods – which often contain added salt – have a greater preference for salty taste than do infants not yet eating these foods. Reflecting their greater liking for salty taste, the exposed infants consumed 55 percent more salt during a preference test than did infants not yet introduced to starchy foods.

At preschool age, the same infants were more likely to consume plain salt, demonstrating the enduring influence of early dietary exposure. The findings highlight the potentially significant role of early dietary experience in shaping the salty taste preferences of infants and young children.

“More and more evidence is showing us that the first months of life constitute a sensitive period for shaping flavor preferences. In light of the health consequences of excess sodium intake, we asked if the effect of early experience extended to salt,” said lead author Leslie J. Stein, Ph.D., a physiological psychologist at Monell.

It has been estimated that reducing sodium intakes could prevent more than 100,000 deaths annually and save billions in medical costs in the United States alone. Beginning as early as 1969, the U.S. government has issued statements calling for a reduction in sodium intake. To date, the call to reduce salt intake has not been successful, in part because humans like the taste of salt.

“Salty taste tells us about the presence of sodium, a critical nutrient needed for survival,” said senior author Gary Beauchamp, Ph.D., a behavioral biologist at Monell. “However, many authorities say that most people eat too much salt. Because it’s been so hard to change adult intakes, we asked whether preferences might be influenced earlier in life through experience with salty food. If so, this may point to the development of public health initiatives that could help people reduce their salt intake.”

In the study, published in the American Journal of Clinical Nutrition, salt preference of 61 infants was tested at both 2 and 6 months of age. At each age, the infant was allowed to drink from three bottles for two minutes each. One bottle contained water, another contained a moderate concentration of salt (one percent, about the saltiness of

commercial chicken noodle soup) and the third bottle had a higher concentration of salt (two percent, which tastes extremely salty to adults).

Preference for salty taste was calculated at each age by comparing the amount the infant consumed of a given salt solution to the amount of water it consumed. Thus, if the infant drank more of the one percent salt solution than water, it was considered to have a preference for the one percent solution.

Two-month-old infants were either indifferent to (one percent) or rejected (two percent) the salt solutions. At 6 months, salty taste preference of the same infants was related to previous exposure to starchy table food. The 26 infants already eating starchy foods preferred both salt solutions to water, while the 35 babies who had not yet been introduced to these foods remained indifferent to or continued to reject the salt solutions.

The researchers focused on starchy table foods because they include processed foods, such as breakfast cereals, bread and crackers, which frequently are used as beginning foods and often contain added salt. Exposure to other types of table foods, such as fruit, was not associated with an increased preference for the taste of salt.

“Our findings suggest that early dietary experience influences the preference for salty taste,” said Stein.

To explore whether the early effect extended into childhood, 26 of the children returned at preschool age. Mothers completed questionnaires about the children’s dietary behaviors, which revealed that the 12 children who were introduced to starchy table foods before six months of age were more likely to lick salt from foods and also were likely to eat plain salt. These findings suggest that the early dietary exposure was related to an increased affinity for the taste of salt several years later.

“It’s important to note that our conclusions are limited by the correlational nature of the study,” said Stein. “Experimental studies are now needed to address the important question of how children and adults come to prefer high levels of salt in their food.”

Studies at Monell will continue to explore the role of early experience in shaping dietary intake across the lifespan.

Beverly J. Cowart of Monell also contributed to the research, which was funded by the National Institute on Deafness and Other Communication Disorders.

The Monell Chemical Senses Center is an independent nonprofit basic research institute based in Philadelphia, Pennsylvania. Monell advances scientific understanding of the mechanisms and functions of taste and smell to benefit human health and well-being. Using an interdisciplinary approach, scientists collaborate in program areas of sensation and perception; neuroscience and molecular biology; environmental and occupational health; nutrition and appetite; health and well-being; development, aging and regeneration; and chemical ecology and communication. For more information about Monell, visit www.monell.org.

# # #