communicating Food for Health

Does Dietary Salt Promote Obesity?

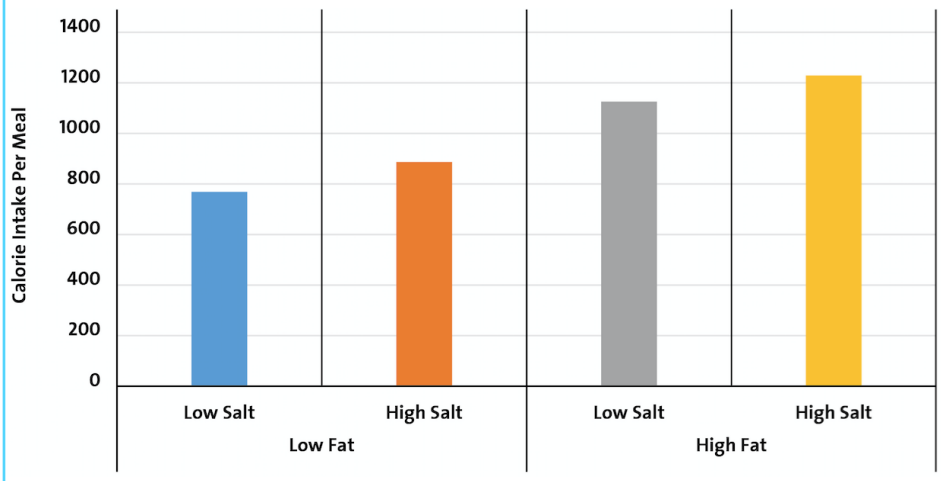
By James J. Kenney, PhD, FACN

Evidence is accumulating that links an increasing consumption of dietary salt, especially within the context of a high-fat modern diet with increased calorie intake and weight gain (1).

Dr. Bolhuis and colleagues investigated the effects of both dietary fat and salt content of meals on ad libitum calorie intake. They also examined the effects of fat taste sensitivity on satiation responses to dietary salt. These researchers demonstrated that increasing both dietary salt and/or fat intake promoted the passive overconsumption of total calories in human subjects. The results of their research is shown in **Figure 1** below.

Dr. Dieuwerke Bolhuis and colleagues concluded that their results showed that increasing the dietary salt content of a meal promotes the passive overconsumption of energy in

Figure 1: *The effects of fat and salt content of meals on total ad libitum energy intake; Figure shows the average kcal per meal (Bolhuis DP. J Nutr. 2016).*



(continued on next page)

August '16

Professional Member Edition

Research

Is there a connection between salt and obesity?

Practitioner Ideas

Get the latest nutrition and health news!

Client and Consumer Education

Handouts: Recipes and Cooking Tips

1. Salmon with Fresh Slaw
2. Thai BBQ Chicken

This Month's Handouts

1. Nutrition 101: Carbohydrates
2. 5 Tips for a Cancer-Fighting Diet
3. 3 Ways to 15 Minutes/Day
4. Picking Perfect Fruit: Peaches and Nectarines

Online: Clipart, Calendar, Recipes, PDF Handouts, Articles, This Month, Newsletter Archive

So if diets higher in salt and fat promote overeating, this latest data in mice suggests that overeating would beget more overeating.

human subjects. Increasing the fat content of a meal increased ad libitum calorie intake more than increasing the salt content, both increased dietary salt and fat led to greater energy intake. They also showed increasing dietary salt content in a fatty meal may override fat-mediated satiation in individuals who are more sensitive to the taste of fat and so less prone to passively over consume high-fat meals. Clearly it is the combination of high-fat calorie dense meals also high in salt that is most likely to promote overeating in the short term (2). If diets higher in salt and fat promote overeating, this may help explain how the typical modern diet is promoting weight gain, insulin resistance, and type 2 DM. A recent study in mice showed that overeating a calorie dense diet reduced the production of a satiety hormone (urogaunylin) normally released by the small intestine. Without this satiety hormone the mice became even more prone to overeating and weight gain and this was true of mice of a normal weight as well as obese mice (3). So if diets higher in salt and fat promote overeating, this latest data in mice suggests that overeating would beget more overeating.

The prevalence of obesity and particularly type DM have been increasing dramatically in recent decades in several Asian countries as they adopt a more typical modern calorie dense more Western-style diet. Traditional Asian diets, while high in salt, were not associated with a high prevalence of obesity or type 2 DM. However, as Asian populations move out of rural areas and into cities and adopt a more typical high-fat Western diet, they have been experiencing a marked increase in the prevalence of overweight people and an even more marked increase in the prevalence of type 2 DM. India, China, and South Korea have all seen a marked increase in average BMI and type 2 DM, especially in their urban populations. There seems little doubt that the typical modern diet high in fat and refined carbohydrates is somehow promotes excessive calorie intake, insulin resistance, obesity, and type 2 DM. However, because the salt content of traditional Asian diets has long been high there was little reason to blame the weight gain on dietary salt intake.

How Salt Promotes Overeating

The mechanism by which increasing the salt content of meals promotes increased calorie intake and weight gain was evaluated in a study by Dr. Young Zhang and colleagues. Their subjects were a group of 38 rural non-obese, healthy Chinese subjects 25 to 50 years old. They measured the level of ghrelin in the blood of their subjects after a 3 day baseline period where the subjects consumed their normal diets. Ghrelin is known as the “hunger hormone” as elevated levels have been shown to increase both hunger and ad libitum energy intake. Dr. Zhang and colleagues found their subjects had an average sodium intake on their usual baseline diet of 4043mg. They were then fed a similar isoenergetic diet with either a low (2272mg) or high (6164mg) sodium content for two 7 day periods. Not surprisingly these normotensive subjects saw their BP increase on…

(Continued at https://foodandhealth.com/does-dietary-salt-promote-obesity/).

Nutrition News:

Connection Between Abnormal Reward Response and Obesity

The journal *Diabetes* just published a new study by M. Yanina Pepino et al, and the results indicate that, according to *Medical News Today*, "age and receptor levels of the reward-associated chemical dopamine influence preference for sweet foods among people of a healthy weight, but not for people who are obese."

Tamara Hershey, another author of the study, asserts "There is a relationship between insulin resistance and the brain's reward system, so that might have something to do with what we saw in obese subjects […] What's clear is that extra body fat can exert effects not only in how we metabolize food but how our brains perceive rewards when we eat that food, particularly when it's something sweet."

For more information, check out the article "Insulin resistance may impair brain's reward response to sugar" at http://www.medicalnewstoday.com/articles/311032.php.

Stick to Cancer Prevention Guidelines for Better Health

The article, "Adherence to Diet and Physical Activity Cancer Prevention Guidelines and Cancer Outcomes: A Systematic Review" has great news for cancer prevention.

According to the study's authors, ""If you adhere to [cancer prevention] guidelines, you may reduce your risk of getting or dying from cancer, though the risk is not totally eliminated […] However, following these recommendations will lead to healthier lives overall and, in turn, reduce the risk for many major diseases."

So what are these recommendations?

Lindsay N. Kohler, one of the study's authors, explains, "Behaviors such as poor diet choices, physical inactivity, excess alcohol consumption and unhealthy body weight could account for more than 20 percent of cancer cases, and could, therefore, be prevented with lifestyle modifications."

Naturally, those modifications include healthy and balanced diet choices, regular physical activity, moderate to no alcohol consumption, and maintaining a healthy body weight.

For more information, be sure to read the article "Adherence to cancer prevention guidelines may reduce risk" at http://www.medicalnewstoday.com/releases/311244.php.

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