



## THYROID CANCER

### Increased intake of nitrate in the diet reported by American men diagnosed with thyroid cancer

#### BACKGROUND

Thyroid cancer is the fastest rising cancer diagnosed in men as well as women. The reasons for this increase are not completely understood, although environmental factors may play a role. One such environmental factor is nitrate in the diet because: a) nitrate prevents iodide from being transported into the thyroid gland where it is used to make the thyroid hormones and b) nitrate is converted to nitrite by bacteria in the mouth and nitrite may be involved in the production of particles that may increase the risk of cancer in animals. Nitrates are found in lettuce, spinach and broccoli while nitrites are found in cold cuts, pasta and bread. This study explored whether nitrate and nitrite taken in the diet may be related to the risk of developing thyroid cancer in an American population.

#### THE FULL ARTICLE TITLE:

Kilfoy BA, et al. Dietary nitrate and nitrite and the risk of thyroid cancer in the NIH-AARP Diet and Health Study. *Int J Cancer* 2011;129:160-72. doi: 10.1002/ijc.25650. Epub November 18, 2010.

#### SUMMARY OF THE STUDY

The authors used a data from the NIH-AARP Diet and Health Study, in which a written survey was mailed to 3.5 million AARP members who were 50 to 71 years of age, starting in 1995. A total of 490,194 questionnaires were completed and analyzed. The intake of nitrates and nitrites was estimated for each participant, based on responses to dietary questions in the survey and a review of the literature on nitrate and nitrite content of foods. The major sources of nitrate in the diet were found to be lettuce, spinach and broccoli. The major sources of nitrite in the diet were found to be cold cuts, pasta and bread. A total of 370 cases of

thyroid cancer were identified in the study participants over a 7 year time period, using data from state cancer registries and a national database on deaths. There were 170 men and 200 women with thyroid cancer in the study. A total of 67% of the thyroid cancers were papillary cancers and 18% of the thyroid cancers were follicular cancers. Men who reported a higher intake of nitrate in the diet, had a higher risk of being diagnosed thyroid cancer (including papillary or follicular types of thyroid cancer). There was no significant relationship between level of nitrate intake and thyroid cancer in women. Level of nitrite intake was not related to thyroid cancer risk in either men or women.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors conclude that nitrates in the diet may be related to thyroid cancer risk and that further studies examining this issue are needed. This study does not prove that nitrates cause thyroid cancer, since there may have been other factors that could have affected the risk of thyroid cancer in the people in this study (such as other dietary factors, lifestyle, possible exposure to pesticides on vegetables or other causes). Also there could have been some mistakes in reporting of the dietary questionnaires by participants. Individuals also need to consider the positive effects of vegetables on general health and discuss any possible changes in their diet with their healthcare provider, since eliminating vegetables from diet could potentially contribute to other negative health effects.

— Anna Sawka, MD

#### ATA THYROID BROCHURE LINKS

Thyroid cancer: [http://thyroid.org/patients/patient\\_brochures/cancer\\_of\\_thyroid.html](http://thyroid.org/patients/patient_brochures/cancer_of_thyroid.html)

#### ABBREVIATIONS & DEFINITIONS

**Papillary Thyroid Cancer:** the most common type of thyroid cancer.

**Follicular Thyroid Cancer:** the second most common type of thyroid cancer.

**Nitrate:** a naturally occurring substance in the diet that prevents iodide from being transported into the

thyroid gland where it is used to make the thyroid hormones. The major sources of nitrate in the diet were found to be lettuce, spinach and broccoli.

**Nitrite:** a naturally occurring substance in the diet that may be involved in the production of particles that may increase the risk of cancer in animals. Nitrite is produced from nitrate by bacteria in our mouths. The major sources of nitrite in the diet were found to be cold cuts, pasta and bread.