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“Exploring the Association in Bitter Taste Sensitivity with a Breast Cancer Diagnosis”

Antioxidants are compounds that aid in neutralizing free radicals, whose harmful effects on the body may contribute to the development of cancer. Foods that are rich in antioxidants are often bitter-tasting and individuals with a high sensitivity to bitter taste may avoid these nutrient-dense foods. The TAS2R gene family is largely responsible for the genetic variations in bitter taste perception. Studies have hypothesized that a reduction in dietary intake of antioxidants due to a heightened sensitivity to bitter taste may increase cancer risk, although further exploration is needed to understand the link between bitter taste perception and cancer. The current study seeks to investigate the relationship between bitter taste sensitivity and incidence of breast cancer in adult females, by determining food preferences, sensitivity to bitter tastes and taste bud density. Participants were recruited from the Surgery Department at the Baton Rouge Clinic. Each participant was asked questions related to demographics, factors that could impact taste sensitivity, breast cancer diagnosis and treatment and asked to rate their liking of various common foods. Following administration of the questionnaires, each participant was asked to report their taste perception for four bitter compound taste strips using strips for phenylthiourea (PTC), sodium benzoate, thiourea, and a chemical-free control. Lastly, the fungiform papillae were counted from a small portion on the tip of the tongue. To date, we have enrolled 39 participants: 18 with a diagnosis of breast cancer and 21 without a diagnosis of breast cancer. Of those with a diagnosis of breast cancer, 77.8% identified as White, 39% had a history of smoking, and 94.4% were postmenopausal. In participants without a diagnosis of breast cancer, 80.9% identified as White, 10% had a history of smoking, and 52.4% were postmenopausal. Participants with a breast cancer diagnosis were significantly older than those without a breast cancer diagnosis (70.6 ± 14.1 years and 50.9 ± 19.0 years, respectively). Patients were classified as a super-tasters, medium-tasters, or non-taster by their response to bitter taste test strips and determination of fungiform papillae density. In our early assessment of the taste sensitivity to bitterness, we discovered that 28% of our participants with a diagnosis of breast cancer found PTC to have a strong taste, suggesting that they are supertasters. Of the non-cancer patients, 33% are suggested to be supertasters based on the strong response to PTC. The average number of papillae for the breast cancer group was 23.44 ± 10.21 . The average for the non-cancer group was 22.62 ± 10.70 . This study is actively enrolling participants and preliminary analyses on food preferences are underway.