The Iodization of Table Salt: The Use of Potassium Iodide vs. Potassium Iodate

Austbo, Sarah (School: Blindern VGS)

Iodine is a micronutrient that is crucial for the properproduction of thyroid hormones in the human body. To put a stop to iodine deficiency,iodine was implemented in salt in 1990. There are two compound forms in which iodine is added into salt; potassium iodide and potassium iodate. Potassium iodideis less stable in elevated temperatures and high levels of humidity compared topotassium iodate, leading to losses of iodine in salt when stored in countrieswith such climates. In countries where there are such climate conditions can be risky for individuals such as pregnant women who require a sufficient amount of iodine intake each day to ensure the proper development of the fetus. A comparison of potassium iodide and potassium iodate was tested in terms of degradability by oxidative methods. Preliminary attempts at destabilizing salt with KI found that KI was not as degradable as previously thought. Therefore, the oxidative methods used directly on the ingredients of interest being KI and KIO3. Storage conditions were simulated by exposing the compounds to heat (high temperatures) and heat and water (humidity). Varying drops of concentrate hydrogen peroxide was used to simulate the natural oxidation process whereby oxygen oxidizes KI in iodized salts over many years. It was found that the mass of KI lost increased with increasing volume of hydrogen peroxide. Therefore, it can be said that KI is more easily degraded by oxidative methods compared to KIO3.

Awards Won: