SALT IODINE MEASUREMENT: COMPARISON OF EXISTEND METHODS

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Iodine-deficiency disorders are the leading cause of preventable brain damage and mental retardation, with two billion people at risk worldwide. The most cost-effective and sustainable intervention to eliminate iodine-deficiency disorders is salt iodization (SI), which involves the adequate iodization of edible salt. It is critical correctly to monitor the iodine content of salt at the production, distribution, retail, and consumption levels to ensure the quality of iodized salt and to verify advancement toward achieving SI. Various methods are available for testing the iodine content in salt, to include salt testing kits, iodometric titration, the historic "reference method" for measuring the iodine content of salt , WYD Iodine Checker™, and inductive coupled plasma-mass spectrometry (ICP-MS). This work was an attempt to compare the accuracy and precision of three analytical methods and to additionally present data on the accuracy of a qualitative rapid salt test kit. We compared iodometric titration with ICP-MS, WYD and a rapid salt test kit to measure the iodine content in various salt samples to include samples from each of the WHO regions. Salt was iodized with both potassium iodate (KIO_3) and Potassium iodide (KI). The measurements by the ICP-MS, WYD Iodine Checker™ and rapid salt test kits were compared on various market samples and on Morton salt test samples. To ensure we were unbiased in the use of the rapid test kit, several individuals who where not laboratorians were asked to participate in the testing utilizing the rapid test kit. We tested the accuracy and precision of all three methods in addition to determining the interday precision of the three quantitative methods.

Key words: Iodine deficiency, Colorimetry, Low-technology