

# Determination of Iodine Content in National Agency of Food and Drugs Administration and Control (NAFDAC) Approved Table Salts

Williams Musa Ombugus\*, Motolani O. Matthew\*\*

\* Chemistry Department College of Education Akwanga, Nasarawa State, Nigeria.

\*\* Chemistry Department Shepherd International College Akwanga, Nasarawa State, Nigeria.

**Abstract-** The study was aimed at determining the content of iodine in NAFDAC approved Table Salts used in Nigeria. Three Table Salts brands namely: Dangote fine edible salt, Royal edible salt and Mr. Chef edible salt was purchased from a retail shop in Makurdi, Benue State, Nigeria. The iodine content of each of the three brands of salt sample were carried out using the titrimetric method. Potassium Iodide (KI) was used for salt iodization. Results show that the Dangote fine edible salt contained 39.6 ppm of iodine while the Royal edible salt contained 41.8 ppm and the Mr. Chef edible salt contained 42.9 ppm. The result confirms that each of the three samples met the iodine content requirements approved by NAFDAC. However, the results were generally lower than the value found at the production level (50 ppm) for each. This could be explained by the fact that iodine content in salt decreases continuously with time. The results were within the acceptable range for human consumption 50 ppm to 30ppm.

**Index Terms-** Iodine content, NAFDAC approved edible salt

## I. INTRODUCTION

Iodized salt is table salt which has been fortified with the essential trace mineral, iodine (Aburto et al, 2014). Many salt producers make iodized salt and it is readily available in most markets. A package of iodized salt will always be clearly marked, indicating that it contained dietary iodine. Salt which does not contain iodine may also be carefully labelled, especially when iodized salt is very common, to ensure that the consumer knows that he or she will not receive dietary iodine from the particular package of salt (Akunyili, 2003).

Iodine appears to have an important impact on the health of the thyroid gland. An unhealthy thyroid can lead to a number of conditions such as goiter, a swelling of the pituitary gland which manifests as a lump in the neck (Egbuta and Onyezili, 2002; Purnendu, 2008; Aburto et al 2014). A condition called cretinism, characterized by developmental and mental delays, reproductive failure, increased child mortality and socio-economic compromise is also caused by iodine deficiency (Merkel, 1984). The role of iodine in take in both of these conditions was recognized in the 20<sup>th</sup> century, and since they are fully preventable through diet, public health advocates hope to entirely eliminate them at some point (Rosenfeld, 2000; Egbuta and Onyezili, 2002).

Many things are natural sources of iodine. Salt, water, fish and sea vegetables for example both contain abundant amount of iodine. The material can be found in plants grown on soil which is rich in oceanic materials, and in animals grazed on such soil. In some regions of the world, however access to iodine is limited, and condition like goiter are epidemic (ICCIDD, 2000; Aburto et al, 2014).

Table salt with iodine does not generally have a noticeably different flavour, according to taste tests. Therefore most people are encouraged to use iodized table salt, to ensure that they receive plentiful amounts of this vital element (WHO, 1996; Akunyili, 2003). One does not really need much of it, about 150 micrograms a day is the recommended daily allowance, and one teaspoon of iodized salt typically offers about 400 micrograms. Some countries also make fluorinated salt to promote dental health, and salt may be supplemented with other dietary minerals as well ( WHO1996,NAFDAC, 2004).

The objective of the study was to confirm iodine content of edible (table) salts sold at the retail point for human consumption irrespective of their method of preparation, conformed with NAFDAC approved specification using a sensitive method of iodine determination.

## II. MATERIALS AND METHOD

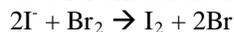
### Materials

Three samples of salt, namely: Dangote Refined Iodized salt, Royal iodized salt and Mr. Chef iodized salt were purchased from a retail shop in Makurdi. All the salts were packaged in small bags made of polypropylene (500 g, 1000 g). labelling notice on each sample included legally mandated information such as, purity of salt, presence of ingredients like anti-caking agents and the amount of iodine in mg/kg as Potassium Iodide (KI).

### Method

50 g portions of each salt were separately dissolved in water in a 250 ml volumetric flask, made up of mark and filtered. 200 ml of filtrate was transferred into a conical flask.

1 mL of saturated Bromine (saturated Bromine is usually used for oxidation of iodide to iodine), was added.



A few glass beads were introduced into it and boiled until all the water evaporated (excess bromine was removed by boiling). More distilled water was added to just dissolve the solid



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#### AUTHORS

**First Author** – Williams Musa Ombugus, Chemistry Department; College of Education Akwanga, Nasarawa State, Nigeria

**Second Author** – Motolani O. Matthew, Chemistry Department; Shepherd International College Akwanga, Nasarawa State, Nigeria

**Correspondence Author** – Williams Musa Ombugus, M.Sc. Anala. Chemistry, College of Education Akwanga, Browilliams70@gmail.com