



## ASSESSMENT OF IODINE CONCENTRATION IN DIFFERENT TYPES OF BRANDED AND OPEN SALT SAMPLES SUPPLIED IN WESTERN U.P.

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**KEYWORDS :** Salt, Thyroid, Iodine

### INTRODUCTION

Iodine is a vital micronutrient that is produced by the human body but is required by the thyroid gland to produce thyroid hormones, tetra iodothyronine (thyroxine, T4) and triiodothyronine (T3), which regulate cell metabolism—the process by which oxygen and calories are converted into energy. Although iodine is an essential micronutrient, the human body does not produce it.<sup>(1)</sup>

According to the American Thyroid Association (2007), iodine deficiency affects humans at every stage of life and leads to several severe disorders. As a result, iodine deficiency can result in enlargement of the thyroid, hypothyroidism, and mental retardation in infants and children whose mothers were iodine deficient during pregnancy.<sup>(2)</sup>

The world's leading cause of mental retardation and brain damage is iodine deficiency. Iodine deficiency causes endemic goitre, cretinism, dwarfism, mental retardation, muscular disorder, spontaneous abortion, sterilization, and stillbirths in addition to mental retardation (Verma and Raghuvanshi, 2001).<sup>(3,4)</sup> The iodization of salt, a common food that is used by the majority of the population, is a confirmed intervention for the prevention of IDD.<sup>(5)</sup> In Africa, the increased availability of iodized salt in households saved millions.<sup>(6)</sup>

People may still not have adequate access to iodized salt in many rural areas of our country. That's why, the goal of the study was to assess the iodine concentration in the different types of salts supplied in Western U.P.

### MATERIAL AND METHOD

This study was carried out in the Department of Biochemistry at Subharti Medical College, Meerut after obtaining the ethical clearance from the 'University ethics Committee'. 50 open salt samples were collected from the different areas of Western U.P., these were then compared with the 50 branded salt samples available in India, in order to assess the iodine concentration present in the different types of salt sample. For this assessment, the iodometric titration method given by Mannar and Dunn was used.<sup>(7)</sup>

### RESULTS

**TABLE 1: Comparison between Branded and Open Salt samples**

Sr.	Name of Salt Brands	Total Concentration of Iodine Present (ppm)	Concentration of Iodine after cooking (ppm)	Location (Western U.P.) for Open Salt	Total Concentration of Iodine Present (ppm)	Concentration of Iodine after cooking (ppm)
1	Patanjali Salt	60	30	Kavi Nagar (Ghaziabad)	10	5
2	Tata Salt	25.5	12	Pratap Vihar (Ghaziabad)	15	7
3	Ankur Salt	20	10	Madhopura (Ghaziabad)	10	5
4	Nourish Salt	4	2	Vasundhara (Ghaziabad)	18	9

5	Anapurna Salt	42	20	Dasna (Ghaziabad)	2	3
6	Hathi Black Salt	4	2	Loni (Ghaziabad)	5	2
7	I-Shakti Salt	10	5	Khora (Ghaziabad)	2	1
8	Gaichap Salt	21	10	Bhim Nagar (Ghaziabad)	11	6
9	Pothigai Natural Salt	3	2	Sunder Puri (Ghaziabad)	6	3
10	Nectar Valley Salt	8	4	Ghanj (Ghaziabad)	8	4
11	Olive Salt	2	1	Avantika (Ghaziabad)	5	2
12	Kush Gold Salt	4	2	Abhay Khand (Ghaziabad)	3	1
13	Nutty Yogi Salt	6	3	Ved Vyas Puri (Meerut)	10	5
14	Nature Land Salt	4	2	Shastri Nagar (Meerut)	7	3
15	Tata Superlite Salt	4	2	KhankharKhera (Meerut)	2	1
16	Daivik Organic Salt	4	2	Mawana (Meerut)	5	2
17	Goshudh Premium Quality Salt	5	2	Rohata (Meerut)	9	5
18	Masala Chowk Salt	12	6	Sardhana (Meerut)	4	2
19	Ruthra Salt	6	3	Saroorpur (Meerut)	2	1
20	Pro Nature Classic Salt	4	2	Parikshitgarh (Meerut)	1	0.5
21	Royal Indian Salt	2	1	Jani (Meerut)	2	1
22	Nirma Salt	34.5	17	KharKhauda (Meerut)	2	1
23	Saffola Salt	20	10	Rajpura (Meerut)	5	2
24	Mineral Salt	8	4	Lawar (Meerut)	7	3

25	Thanjai Sea Salt	35	17	Kirti Place Colony (Meerut)	10	5
26	Puro Healthy Salt	3	1	Daurala (Meerut)	5	5
27	Himalayan Pink Salt	8	4	Sardana (Meerut)	3	1
28	Piriyam Salt	1.5	0.5	Mohiuddinpur (Meerut)	2	1
29	Organic Tattva Salt	4	2	Aminagar (Meerut)	8	4
30	Good life Salt	20	10	Sindhawali (Meerut)	6	3
31	Ashirwad Salt	30	15	Shivpuri (Meerut)	8	4
32	Mother's Choice Salt	19	9	Thapar Nagar (Meerut)	11	6
33	Aap Ka Bazaar Salt	4	2	Victoria Park (Meerut)	9	5
34	Akar Salt	28	14	Samai Pur (Meerut)	5	2
35	Nutriwish Salt	4	2	Rithani (Meerut)	4	2
36	BB Royal Salt	5	2	Paratpur (Meerut)	9	5
37	Kokoma e Salt	6	3	Pabli Khas (Meerut)	7	3
38	Graminway Salt	4	2	Nagli Badli (Meerut)	2	1
39	Shivona Salt	6	3	Modipuram (Meerut)	8	4
40	Cee Pee Salt	4	2	Meerpur (Meerut)	1	0.5
41	Sagar Shudh Salt	5	2.5	Khanpur (Meerut)	2	1
42	Pure Bestie Salt	4	2	Kalyanpur (Meerut)	8	4
43	Spicica Salt	2	1	Jatauli (Meerut)	6	3
44	Herbkraft Salt	7	3	Hasanpur (Meerut)	1	0.5
45	Saroyce Salt	8	4	Harra (Meerut)	9	5
46	Agri Club Salt	6	3	Gandhi Ashram (Meerut)	11	6
47	Tivracare Salt	4	2	Bhadoli (Meerut)	6	3
48	Urban Platter Salt	4.5	2	Begum Bagh (Meerut)	4	2
49	Nxtgen Ayurveda Salt	4	2	Atrara (Meerut)	6	3
50	Groshaat Salt	8	4	Kithaur (Meerut)	1	0.5

**DISCUSSION**

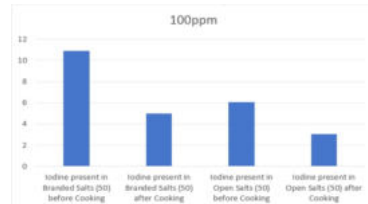
In this study 50 branded salt samples were tested in order to compare them with 50 open salt samples. It was found that the branded salt samples contained significantly more iodine concentration (11±4) as compared to the open salt samples (6±2). The similar findings were observed by M.S. Wagh et al. We also tested the iodine concentration of respective salt samples after cooking them. It was found that there is a significant reduction in the iodine concentration after cooking of the

salt samples. We found (5±1) and (3±1) mean values for the after cooking branded and open salt samples respectively. Although a wide scale study should be done to create awareness among society.

**CONCLUSION**

We conclude that the branded salts are more beneficial to consume as compared to the open salts, as they will provide more iodine. Also we suggest that as we have noticed the reduction of iodine concentration after cooking, so the extra iodine content should be added in the branded salts in order to fulfil the minimum requirement. This may also help in reducing the iodine deficiency disorder prevailing in the areas of Western U.P.

**FIGURE 1: Comparison between Branded and Open Salt samples**



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