

we have approached the problem by the expedient of adding sufficient iodine to the salt of the Nurses' Home of the Dunedin Hospital to bring the urine excretion to a level comparable with that of non-goitrous countries. We found it necessary to add one part of potassium iodide to 20,000 parts of salt to secure the required level, and for the last two years this supplementation has been maintained.

The essential facts with regard to the supplementation adopted will be found in Table XI.

Table XI.

Period.	Salt used.	Salt-consumption, Gms./Person/ Day.	Estimated Iodine Supplement, Mgm./Day.	Average Urinary Excretion of Iodine, Mgm./Day.
Before June, 1926	Ordinary	..	Nil	..
June, 1926, to December, 1935	Commercial iodized, 4.7/gm.	5.4	25	57 (6)*
January, 1936, to March, 1937	Special, 22/gm. ..	5.5	121	90 (24)*
April, 1937, to December, 1938	Special, 41/gm. ..	5.7	234	138 (9)*

* Figures in brackets give the number of individual determinations.

Throughout the period both table and cooking salt has been iodized. While a certain amount of wastage of table salt occurs it has been found to be small, and all the salt used in cooking has been entirely consumed without wastage. The essential aims of the experiment were to determine what proportion of iodide needs to be added to salt to raise the excretion level to that found in non-goitrous areas, to find approximately what proportion of the intake is excreted in the urine, to determine the harmlessness or otherwise of such supplementation on goitre, to observe the prophylactic and curative value of such supplementation. The results show that a daily supplementation of at least 200 micrograms is necessary to raise the level of iodine metabolism to that of non-goitrous countries. No untoward effects have been observed from the utilization of this supplementation, while the prophylactic and curative results have been satisfactory. It is difficult to express these results statistically, as the turnover of nurses is a rapid one and the incoming nurses have shown a relatively high incidence of enlarged thyroids. No goitres have developed during the last two years among nurses who were free from thyroid enlargement on entering the hospital, whereas in the period 1926–35 a number of such goitres developed. The therapeutic results have been uncertain.

This study has been supplemented by similar experiments in a local orphanage and a boarding-school, but the duration of the experiment has been too short to enable a full report to be made. The results to date, however, are consistent with the nurses' experiment.

This experiment shows that a daily supplementation of 200 micrograms to 250 micrograms of iodine per day would give satisfactory prophylaxis. The necessary concentration of the iodine in the salt to secure this will depend on whether iodized salt is used for the commercial preparation of salted foods such as butter, bread, bacon, cheese, &c., as well as for domestic purposes. If used for domestic purposes only (cooking and table salt) the necessary supplementation will be provided by 5 grams to 6 grams of salt iodized with 1 part of potassium iodide per 20,000. If iodized salt is also to be made compulsory for commercial preparation of salted foods, a lower level would be permissible. It would theoretically be more satisfactory to adopt this course, but the amount of salt used for this purpose and ingested in New Zealand is at present unknown. This, however, should be capable of measurement.

CHAPTER VII.—SUMMARY.

(1) Evidence is submitted to show that goitrogenic activity is widely distributed in the seeds of *Brassicæ* species.

(2) This goitrogenic factor appears to depress the metabolic rate of rats.

(3) The average urinary iodine excretion in New Zealand is found to be 100 micrograms per day lower than that of adjacent countries. This difference is related to the goitre distribution.

(4) Iodized salt containing 1 part of potassium iodide in 20,000 parts of salt supplies an adequate supplementation for goitre prophylaxis if used for cooking and table purposes.

CHAPTER VIII.—BIBLIOGRAPHY.

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