Analyses Of Zinc Content Of Different Types Of Sesame Seeds In The South Indian Delta Region

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Abstract: Sesame (Sesamum indicum L.) belongs to the order tubiflorae, is an herbaceous annual plant with many inherent medical uses. Its one of the vegetarian sources of Zinc. . Sesame has other advantages to be part of the daily diet intake. Changes in soil due to application of manure in the delta area of India is likely to change the mineral content. Hence, we decided to analyse the amount of zinc in different varieties of sesame seeds. Four types of sesame seeds from the cauvery delta are used for detection of zinc level after clearance from qualified botanists. 1. Black sesame 2. White sesame 3. Pestled sesame 4. Long sesame are the above mentioned four. Our results indicate that black:7.24mg/100grams white:9.60 mg/100 grams pestled:7.86 mg/100 grams, long:7.35 mg/100 grams. These results go along with established levels in different areas. We conclude that even after intense application of fertilizers and insecticides, the level of zinc in sesame seeds does not change.

Key words: delta, fertilizer, insecticide, sesame, seeds, soil, zinc.

1 INTRODUCTION:

Sesame (Sesamum indicum L.) belongs to the order tubiflorae, with a family Pedaliaceae, is an herbaceous annual plant which is cultivated for its edible seed, oil and flavoursome value. Sesame seed actually contains 50-60% of high-quality edible oil which is rich in polyunsaturated fatty acids and natural antioxidants, sesamin, sesamolin and chemicals alike tocopherols. Sesame seed is high in protein, vitamin B1, dietary fibre as well as an excellent source of minerals like phosphorous, copper, magnesium iron calcium, manganese and zinc “[1]”. Recently zinc and its deficiency are gaining importance in medical field. The role of zinc in biology can be classified into three general functional types, namely catalytic, regulatory and structural functions. Zinc deficiency has been associated with many illnesses in human beings “[2]”. The normal daily requirement of Zn is between 2.2 to 4.5 mg/ day which is likely to change because of age and pregnancy. Prevalence of zinc deficiency in developing countries like India is very common “[3]”. Around 61% of the population is at an increased risk of low dietary zinc intake. Almost 4% of child mortality has been linked with zinc deficiency. Studies also demonstrated that 49.4% of adolescent girls in Delhi are suffering from some form of zinc deficiency “[4]”. Even though meat is main source of zinc in diet, sesame and its products are more commonly consumed in India. Sesame has other advantages to be part of the daily diet intake. Changes in soil due to application of manure in the delta area of India is likely to change the mineral content. Hence, we decided to analyse the amount of zinc in different varieties of sesame seeds.

2 METHODOLOGY:

The sesame seeds and their types were analysed and discussed with biologists. The four types of sesame seeds were collected. They were verified with dealers of the seeds and farmers to ascertain that these were grown in the cauvery river delta. We were able to collect four different types in our area. The names of the four were as follows. 1. Black sesame 2. White sesame 3. Pestled sesame 4. Long sesame. The difference between the varieties were delineated by qualified biologists. (Fig 1) They were subjected to zinc estimation by the method of De Vries and Tiller. “[5]”. All values were doubled checked and the mean is presented. The sesame seeds were subjected to such analyses before any form of decay.

Fig 1 *showing different types of seeds:*

3 RESULTS:

The analyses were uneventful. The results are tabled in Table1.

Table 1 - Zinc content in different variety of sesame seeds

S.No.	Sesame varieties	Result (mg/100g)
1.	Black sesame	7.24
2.	White sesame	9.60
3.	Pestled sesame	7.86
4.	Long sesame	7.35

4 DISCUSSION:

In our study, we have shown that in all the three types, black, pestled and long sesame seeds, we have found the Zn content to be between 7.2 – 7.9 mg/100 gram. But the white sesame showed a content to be 9.6 mg/100 gram. It has been shown in many studies that the Zn content of sesame seeds is between 7 and 8 mg/100 grams while the decorticated seeds may show a value of 9.5 mg. "[6]" Our results go along with them. The zinc content is likely to vary with the soil type. Routine use of manure in the soil is also likely to change the profile of zinc content of the soil. A factor determining the uptake of metals by plants may be the availability of the metals in the soil to plants. The availability of metals to the plant from the soil will depend on the physical and chemical properties, such as particle size distribution, salinity, organic-matter content, pH and redox potential. "[7]" Routine application of manure and different types of insecticides has changed the profile of the soil in the delta region of the river Cauvery. This soil change is likely to affect the intake of metals by plants. "[8]" Yet in our study of presence of Zinc in sesame seeds, the content is according to described levels. Such changes have not come and the probable reason we can suggest is the zinc content of our fertilizers may be insignificant to affect the soil. Even though the meat consumption is a source of zinc, it may vary among individuals according to religion, season, particular months in our place. Hence a common vegetarian source is a must. Among these, sesame is a prominent source. Sesame has got other health benefits; hence its mineral content assumes significance. "[2]" The limitation of our work is that we have not studied other ingredients as we aimed to evaluate only the zinc content of different varieties of sesame. We have also not evaluated the soil characteristics even though we made sure that the sesame is produced in the delta region where extensive manuring is a routine.

5 CONCLUSION:

The zinc content of three different varieties of sesame seeds varied between 7.2 – 7.9 mg/100grams. The decorticated white seeds contain 9.6mg. This content is well within accepted and described range. The application of fertilizers in the cauvery delta has not changed the zinc content of the sesame seeds.

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