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NOTE

Analysis of Fluoride in Tea Dust and Leaves Available in Nagercoil Market of Kanyakumari District

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Fluorosis, which is a serious public health problem in many areas of the world, is due to excessive intake of fluoride containing food materials. Tea which has been traditionally an important constituent of Indian diet is found to contain fluoride. So this study is to analyse the fluoride content present in different varieties of tea dust and leaves available in the local market of Kanyakumari District (Tamilnadu).

The principal sources of fluoride intake in human beings are water, edible vegetation, marine animals and industrial dust.[1] The safe limit prescribed by World Health Organisation for the amount of fluoride in drinking water is less than 1 ppm.[2] The large amount of water used for cooking and drinking purpose in the Indian environment is responsible for the excessive intake of fluoride which causes both dental and skeletal fluorosis. However, certain areas in India where drinking water contains fluoride within safe limits are found to be affected by fluorosis. This is because of the physico-chemical parameters like alkalinity, hardness and calcium which enhances the severity of the disease. Food containing excess of fluoride when taken also causes fluorosis.

In India most of the people are labourers who consume tea frequently. So it is decided by the present workers to determine the amount of fluoride in tea dusts and leaves available in the local market.

For this purpose, twenty one different brands of Indian tea dusts and leaves were collected from the market and were labelled as T1 to T21.

The fluoride content of tea was determined in three ways:

1. 2 g of tea sample was weighed and refluxed with 200 mL of water which is free from fluoride for 30 minutes. The content was cooled and filtered. The filtrate was made up to 200 mL in a standard measuring flask.
2. 2 g of the sample was weighed and boiled with 200 mL of water for 5 minutes. The content was cooled and filtered. The filtrate was made up to 200 mL in a standard measuring flask.
3. 2 g of the sample was weighed and infused in boiling water, the contents were cooled and filtered and made up to 200 mL in a standard measuring flask.

Fluoride levels in the samples prepared by the above methods were determined using Elico Fluoride Meter CL352. The results obtained are presented in Table-1.

The results revealed that most of the brands contained fluoride greater than 1 ppm. Also the amount of fluoride varied depending upon the way by which the infusion was prepared. It was found that the fluoride content was very high in

the infusion prepared by boiling the solution for 30 min and it was low in the infusion prepared by adding the dust in boiling water.

TABLE-1
FLUORIDE CONCENTRATION IN TEA INFUSION

No.	Name	F^-/200 mL in mg		
		Just after boiling	After boiling for 5 minutes	After boiling for 30 minutes
1	T1	0.74	0.76	0.78
2	T2	0.04	0.28	0.52
3	T3	0.46	0.48	1.34
4	T4	0.18	0.20	0.40
5	T5	0.10	0.46	0.48
6	T6	0.22	0.28	0.62
7	T7	0.22	0.36	0.68
8	T8	0.04	0.50	0.52
9	T9	0.26	0.28	0.76
10	T10	0.02	0.04	0.06
11	T11	0.00	0.26	0.34
12	T12	0.20	0.46	0.68
13	T13	0.40	0.48	1.34
14	T14	0.30	0.24	0.46
15	T15	0.38	0.60	1.02
16	T16	0.10	0.16	0.46
17	T17	0.08	0.96	1.06
18	T18	0.02	0.26	0.26
19	T19	0.04	0.18	0.18
20	T20	0.02	0.36	0.64
21	T21	0.80	0.90	1.10

Conclusion

Heavy tea consumers have a loading of fluoride similar to that of endemic or industrial fluorosis. Since the amount of fluoride in the infusion depends upon duration of boiling, the users are advised not to boil for a longer time. If a strong infusion is needed, it is better to add more amount of tea leaves or dust rather than infusing it for a longer time.

REFERENCES

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