Data article

Data on fluoride concentration levels in cold and warm season in City area of Sistan and Baluchistan Province, Iran

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A B S T R A C T

The need for fluoride in drinking water to the extent that reduces the amount of tooth decay and the other hand does not cause dental fluorosis, has been well documented as an important fact. The aim of this research is to survey values of fluoride in drinking water in Sistan and Baluchestan. In this descriptive and analytical study, the number of 551 samples during 4 seasons of 2013 year from rural drinking water sources via rural water and Wastewater Company has been taken. The concentration of fluoride in water samples was measured using SPADNS method. Results shows that the average concentration of fluoride in drinking water supplies for the rural region of Khash, Sarbaz, Iranshahr, Saravan, Nickshahr.
Specifications Table

| Subject area               | Water chemistry |
|---------------------------|-----------------|
| More specific subject area| Water fluoride  |
| Type of data              | Tables, Figures |
| How data was acquired     | Fluoride concen|tation was estimated using HACH device (spectrophotometer DR/5000 Company, USA) - Spectrophotometer (DR 5000- HACH). By SPADNS Method at wavelength of 580 nm. |
| Data format               | Raw, Analyzed   |
| Experimental factors      | Samples were taken via polyethylene packaging with volume of 1 l from any source of drinking water provided for residents. Also samples were transported to the water laboratory in each city as soon as possible in a specified conditions |
| Experimental features     | Determine the concentration levels of fluoride |
| Data source location      | Sistan and Baluchestan province. Iran |
| Data accessibility        | Data are included in this article |

Value of the data

- Based on the data, Fluoridation of drinking water in rural areas with less than the WHO optimum value is recommended.
- Based on the data, in areas with low level of fluoride in drinking water, consuming food and beverages with high level of fluoride is suggested.
- Combining the reported data on fluoride concentrations in drinking water with information on ambient temperature is very useful.
- The data shown here will be informative for health policy makers by assigning interception actions against adverse health effects of fluoride with considering fluoride intake by drinking water and food.

1. Data

See Figs. 1 to 3 and Table 1 here.
2. Experimental design, materials and methods

2.1. Study area description

Sistan-and-Baluchistan province in South-East of Iran between the latitudes 25° 4' - 31°25' N and Longitudes 58° 55' - 63°20' E, encompassing an area is about 18175 km² (Fig. 4). The area has a hot climate, and the highest and lowest air temperatures respectively are 50 °C and −7 °C, with an annual average of 25 °C.

2.2. Sample collection and analytical procedures

This cross sectional study has been conducted on rural drinking water sources under supervision of department of rural water and waste water province for a year. According to standard method number 2348 Institute of Standards & Industrial Research of Iran, Sampling was carried out randomly
in different seasons. The number of sampling was variable. Samples were taken via polyethylene packaging with volume of 1 l from any source of drinking water provided for residents. Also samples were transported to the water laboratory in each city as soon as possible in a specified condition. Fluoride concentration was estimated using HACH device (spectrophotometer DR/5000 Company, USA) -Spectrophotometer (DR 5000- HACH). By SPADNS Method at wavelength of 580 nm [1–6]. Ultimately, with employing Arc GIS 9.3 software, fluoride ion dispersion at the provincial level, with using geographic coordinates (longitude and latitude regions) from collected water place, has been depicted, then description of critical points was discussed. Excel software has been used for statistical analysis of results and its comparison with national standard number 1053 Institute of Standards and Industrial Research of Iran with announcement of maximum allowable concentration of fluorides in drinking water (0.5 to 1.5 mg/l) [7–11].

![Figure 3. Distribution spatial Concentration Fluoride in the study area.](image-url)
Table 1
Concentrations of Fluoride and Temperature (°C) in drinking water collected from sistan and baluchestan.

| Counties | Season | Mean | Min | Max | S.D. | Mean T(°C) | Min T(°C) | Max T(°C) | S.D. |
|----------|--------|------|-----|-----|------|------------|-----------|-----------|------|
| Khash N = 66 | Spring | 0.73 | 0.28 | 1.46 | 0.32 | 30.1 | 23 | 38 | 3.05 |
|            | Summer | 0.77 | 0.38 | 1.11 | 0.23 | 29.3 | 24 | 35 | 3.27 |
|            | Fall   | 0.58 | 0.39 | 1.71 | 0.2 | 17.3 | 13 | 38 | 3.4 |
|            | Winter | 0.86 | 0.38 | 1.51 | 0.33 | 8.9 | 7 | 12 | 1.36 |
| Saravan N = 174 | Spring | 0.5 | 0.19 | 0.87 | 0.187 | 38.1 | 32 | 42 | 2.35 |
|            | Summer | 0.59 | 0.24 | 1.39 | 0.243 | 30.9 | 20 | 39 | 5.69 |
|            | Fall   | 0.5 | 0.01 | 1 | 0.18 | 19.4 | 12 | 30 | 4.7 |
|            | Winter | 0.56 | 0.15 | 1.33 | 0.21 | 10.8 | 7 | 15 | 2.6 |
| Sarbaz N = 109 | Spring | 0.39 | 0.19 | 0.75 | 0.143 | 31 | 24 | 36 | 4.05 |
|            | Summer | 0.32 | 0.02 | 0.71 | 0.149 | 32.4 | 24.6 | 47 | 5.3 |
|            | Fall   | 0.3 | 0.01 | 0.5 | 0.18 | 27.5 | 25 | 35 | 3.45 |
|            | Winter | 0.32 | 0.21 | 0.53 | 0.07 | 19.1 | 12 | 25 | 4.9 |
| Iranshahr N = 106 | Spring | 0.57 | 0.21 | 1.26 | 0.02 | 38 | 18 | 36 | 4.55 |
|            | Summer | 0.79 | 0.44 | 1.7 | 0.36 | 36.2 | 29 | 45 | 4.4 |
|            | Fall   | 0.51 | 0.23 | 0.87 | 0.165 | 24.7 | 20 | 32 | 2.78 |
|            | Winter | 0.61 | 0.35 | 1.15 | 0.19 | 15.6 | 12 | 21 | 2.01 |
| Nikshahr N = 96 | Spring | 0.4 | 0.14 | 0.67 | 0.15 | 31.6 | 24 | 39 | 5.1 |
|            | Summer | 0.48 | 0.22 | 0.76 | 0.16 | 33 | 28 | 38 | 4.25 |
|            | Fall   | 0.44 | 0.19 | 1.55 | 0.29 | 26.5 | 20 | 39 | 4.1 |
|            | Winter | 0.41 | 0.14 | 0.94 | 0.16 | 18 | 12 | 25 | 3.1 |

Fig. 4. Location of water sampling sites in Sistan Baluchistan.
References

[1] A.A. Mohammadi, M. Yousefi, A.H. Mahvi, Fluoride concentration level in rural area in Poldasht city and daily fluoride intake based on drinking water consumption with temperature, Data Brief 13 (2017) 312–315.

[2] F.B. Asghari, A.A. Mohammadi, Z. Abboosaeidi, M. Yaseri, M. Yousefi, Data on fluoride concentration levels in cold and warm season in rural area of Shout (West Azerbaijan, Iran), Data Brief 15 (2017) 528–531.

[3] M. Massoulinejad, M. Ghaderpoori, A. Shahsavani, M.M. Amini, Adsorption of fluoride over a metal organic framework UiO-66 functionalized with amine groups and optimization with response surface methodology, J. Mol. Liq. 221 (2016) 279–286.

[4] H. Faraji, A.A. Mohammadi, B. Akbari-Adergani, N.V. Saatloo, G. Lashkarboloki, A.H. Mahvi, Correlation between fluoride in drinking Water and its levels in breast milk in Golestan Province, Northern Iran, Iran. J. Public Health 43 (2012) 1664.

[5] M. Mirzabeysi, M. Naji, N. Yousefi, M. Shams, H. Biglari, A.H. Mahvi, Evaluation of corrosion and scaling tendency indices in water distribution system: a case study of Torbat Heydariye, Iran, Desalination Water Treat. 57 (2016) 25918–25926.

[6] A.A. Mohammadi, M. Yousefi, M. Yaseri, M. Jalilzadeh, A.H. Mahvi, Skeletal fluorosis in relation to drinking water in rural areas of West Azerbaijan, Iran, Sci. Rep. 7 (2017) 17300.

[7] A. Abbasnia, M. Alimohammadi, A.H. Mahvi, R. Nabizadeh, M. Yousefi, A.A. Mohammadi, H. Pasalari, M. Mirzabeigi, Assessment of groundwater quality and evaluation of scaling and corrosiveness potential of drinking water samples in villages of Chabahar city, Sistan and Baluchistan province in Iran, Data Brief 16 (2018) 182–192.

[8] A. Amouei, A. Mahvi, A. Mohammad, H. Asgharnia, S. Fallah, A. Khafajeh, Fluoride concentration in potable groundwater in rural areas of Khaf city, Razavi Khorasan province, Northeastern Iran, Int. J. Occup. Environ. Med. 3 (2012).

[9] M. Yousefi, M. Ghoochani, A.H. Mahvi, Health risk assessment to fluoride in drinking water of rural residents living in the Poldasht city, Northwest of Iran, Ecotoxicol. Environ. Saf. 148 (2018) 426–430.

[10] M. Yousefi, A.A. Mohammadi, M. Yaseri, A.H. Mahvi, Epidemiology of fluoride and its contribution to fertility, infertility, and abortion: an ecological study in West Azerbaijan Province, Poldasht County, Iran, Fluoride 50 (2017) 343–353.

[11] A.A. Mohammadi, H. Najafi Saleh, A.H. Mahvi, M. Alimohammadi, R. Nabizadeh, M. Yousefi, Data on corrosion and scaling potential of drinking water resources using stability indices in Jolfa, East Azerbaijan, Iran, Data Brief 16 (2018) 724–731.