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# کنگره ملی نان کامل و فرآورده های غلات

## Iranian Congress of Whole Bread and Grain Products



Code:

### Investigating the dietary intake of chromium and barium through the consumption of bread and cereals by the Total Diet Study method in the population of Shiraz, year 1400

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**Background and Aims:** Bread is considered as the cheapest and most available food source. According to the information published by the Iranian Statistics Center in 1400, the per capita consumption of bread in Iran is 161 kg per household per year, which is a significant amount according to global statistics. The presence of heavy metals in cereals and bread products is one of the most important safety risks. The purpose of the present study is to investigate the amount of chromium and barium in the diet through the consumption of bread and cereals by the Total Diet Study method in the population of Shiraz.

**Results:** The average daily intake of chromium and barium and the contribution of each to the entry of metals into the body for lavash bread (0.071, 0.076), Berberi bread (0.077, 0.024), Sangg bread (0.184, 0.043) ) and Tufton (0.009, 0.004) mg per day were reported. Also, these numbers for the cereal group were announced as follows: rice (0.191, 0.024), corn (0.021, 0.003), pasta (0.00, 0.287), vermicelli (0.00, 0.001), string (0.012, 0.002) mg per day. Based on the risk analysis, the amount of HQ for the bread group was 0.0004 for chromium and for barium  $2.20 \times 10^{-7}$ . The amount of HQ also for the grain group is 0.0008 for chromium and  $6.4 \times 10^{-7}$  for barium was obtained. The number obtained for the carcinogenic risk (TCR) of chromium was reported for the bread group  $4.98 \times 10^{-7}$  and for the cereal group  $9.58 \times 10^{-7}$ .

**Materials and Methods:** Sampling of different breads and cereal products was done from 5 different parts of Shiraz city and then heavy metals were extracted in the laboratory by wet digestion method. ICP-OES was used to read the amount of metal and then relevant analyzes were performed.

**Conclusion:** Since all the daily intake of chromium and barium showed a lower number compared to the global indices, and also the numbers obtained in the non-carcinogenic risk for both metals were reported to be less than one, In addition, the carcinogenic risk of chromium was less than the critical limit of  $10 \times 10^{-4}$ , so it can be concluded that the bread and cereals consumed by the population of Shiraz do not pose a health risk in terms of the contribution of metals to the body.

**References:** Gowen, A.A.; Feng, Y.; Gaston, E.; Valdramidis, V. Recent Applications of Hyperspectral Imaging in Microbiology. *Talanta* 2015, 137, 43–54.

**Keywords:** Bread , cereal products, chromium, barium, diet study