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Data Article

Data on prevalence of additive colors in local food and beverage products, Tehran, Iran

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ARTICLE INFO

Article history:

Received 13 May 2018

Received in revised form

19 June 2018

Accepted 5 July 2018

Available online 9 July 2018

Keywords:

Artificial additive colors

Natural additives colors

Permitted colors

Non-permitted colors

ABSTRACT

The quality check and determination of permitted and non-permitted additive colors in food products is very important for customer's right protection and health. This survey was undertaken to demonstrate the frequently use of additive colors and products targeted to color adulteration in Iranian foods and beverages. From the 1120 of the samples, 18.86% contained artificial colors, 11.89% contained natural colors and 69.25% of samples had no additive colors. Tartrazine (E102) was the only non-permitted artificial dye used in samples. Among products with additive colors, only 4.38% of samples failed to meet with national Iranian standard and 61.23% of non-compliance samples were from non-industrial sectors and mostly were saffron and food containing saffron such as saffron rock candy and saffron chicken. These places and products quality are main the concern to solve the color adulteration in Iranian food market.

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Specifications Table

Subject area	Chemistry
More specific subject area	Food chemistry
Type of data	Tables
How data was acquired	The data were collected from Kimia Test Fam Laboratory, Tehran, Iran during the years of 2011–2015
Data format	Raw, Analyzed
Experimental factors	The mentioned parameters above, in abstract section, were analyzed according to the standard methods.
Experimental features	The food additive colors in various food products were determined.
Data source location	Tehran province, Iran
Data accessibility	The data is with this article and supplemented excel file

Value of the data

- The dataset shows the amount of additive colors in local food and beverage products.
- The dataset signifies the amount of permitted and non-permitted colors under Iranian laws.
- The dataset of this article identifies products with non-authorized colors, which can be useful for other investigators working in area of quality assurance of foods.

1. Data

The dataset provided here (Tables 1–3) demonstrate the distribution of artificial and natural colors in samples, the distribution of artificial colors and non-compliance products with authorized and non-authorized colors according to Iranian national standard.

2. Experimental design, materials and methods

The Iranian national standard organization only permits seven artificial dyes of Quinoline Yellow (E104), Sunset Yellow FCF (E110), Azorubine (E122), as well as Ponceau 4R (E124), Allura Red AC (E129), Indigotine (E132) and Brilliant Blue FCF (E133) in different type of products. The prevalence use of permitted and non-permitted artificial dyes has been reported from different states of Iran, previously. The required data were collected from the results documented in Kimia Test FAM Laboratory during the five years of 2011–2015. The additive color of 1120 samples, which represent 30% of samples analyzed in Tehran city for additive colors, was determined using thin layer chromatography methods (TLC) according to 2634 Iranian national standard and were compared to 740 Iranian national standard for permitted food additive colors. The data were entered into an Excel spreadsheet and were analyzed by descriptive statistics [1–10].

Table 1
Distribution of artificial and natural colors in products.

Category	Sample analyzed	Samples containing food colors	
		Artificial color	Natural color
Energy-Drink	83	71.08	28.92
Soft-drink	41	58.70	41.30
Candy/Gummy-candy	49	67.35	28.57
Chewing Gum	37	61.16	29.73
Saffron	72	13.89	1.39
Fruit drink powder	13	53.33	26.67
Rock-candy	46	13.04	17.39
Pastry/ready cake powder	34	17.65	11.76
Saffron Chicken	11	27.27	18.18
Edible ices	5	100	0
Snack	5	100	0
Fruit-drink	122	2.46	2.46
Syrup	17	16.67	55.56
Jelly	14	78.57	14.29
Chocolate/ice cream powder	5	40	20
Fruit-juice /fruit syrup	81	2.47	1.23
Sweet cream	8	0	87.50
Vinegar/vinegar drink	15	0	73.33
Ketchup sauce	19	5.26	0
Pomegranate sauce	6	0	33.33
Canned	41	0	22.44
Rusk powder	2	50	50
Cooked meat	3	33.33	0
Other products	391	0	0
Total	1120	18.86	11.89

Table 2
Distribution of artificial colors in products.

Category	E104%	E110%	E122%	E124%	E129%	E133%	E102%
Energy-Drink	0	0	0	0	1.2	0	1.2
Soft-drink	24.39	17.07	2.44	0	29.27	19.51	0
Candy/Gummy-Candy	8.16	8.16	0	0	0	2.04	0
Chewing Gum	0	0	0	0	0	11	0
Saffron	1.39	4.17	11.11	4.17	0	0	0
Fruit drink powder	23.08	0	0	0	46.15	23.08	0
Rock-candy	13.04	0	0	0	0	0	0
Pastry/ready cake Powder	0	0	0	0	7.14	0	0
Saffron Chicken	0	18.18	0	0	0	0	27.27
Edible ices	20	20	60	0	0	40	0
Snack	0	100	0	0	0	0	0
Fruit-drink	0	1.46	0	0	0	0	0.82
Syrup	0	0	0	0	11.11	5.56	0
Jelly	35.71	21.43	28.57	0	7.14	28.57	0
Chocolate/ice Cream Powder	20	20	20	0	0	20	0
Fruit-juice /fruit Syrup	1.23	0	1.23	0	0	0	0
Ketchup sauce	0	0	5.26	0	0	0	0
Cooked meat	0	33.33	0	0	0	0	0
Rusk powder	0	50	0	0	0	0	50
Total	24.83	20.69	13.79	2.07	15.86	18.62	4.14

Table 3
Distribution of permitted and non-permitted additive color in products.

Category	Polluted Products (%)	E104 (%)	E110 (%)	E122 (%)	E124 (%)	E129 (%)	E133 (%)	E102 (%)	E100 (%)	E150a-d (%)	Carthamus yellow (%)
Saffron Rock Candy	30.43	42.86	0	0	0	0	0	0	42.86	0	14.29
Saffron Pastry	15.28	6.67	20	53.33	20	0	0	0	0	0	0
Saffron Chicken	25	50	0	12.50	0	0	37.50	0	0	0	0
Fruit Drink	45.45	0	40	0	0	0	0	60	0	0	0
Sauce	2.48	0	66.67	0	0	0	0	33.33	0	0	0
Cooked Meat	5.56	0	0	20	0	0	0	0	0	80	0
Energy drink	33.33	0	100	0	0	0	0	0	0	0	0
Fruit Juice	1.20	0	0	0	0	50	0	50	0	0	0
Fruit Syrup	1.45	100	0	0	0	0	0	0	0	0	0
Ready Cake Powder	16.67	0	0	50	0	50	0	0	0	0	0
Rusk Powder	10	0	0	0	0	100	0	0	0	0	0
Total	4.38	21.67	16.67	20	5	3.33	6.67	10	10	3.33	3.33

Acknowledgements

This work was carried out as a part of a M.Sc. Thesis study at the Tehran University of Medical Science. We gratefully acknowledge the help provided by the Kimia Test Fam laboratory for this study.

Transparency document. Supporting information

Transparency data associated with this article can be found in the online version at <https://doi.org/10.1016/j.dib.2018.07.001>.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at <https://doi.org/10.1016/j.dib.2018.07.001>.

References

- [1] F. Martin, J.-M. Oberson, M. Meschiari, C. Munari, Determination of 18 water-soluble artificial dyes by LC-MS in selected matrices, *Food Chem.* 197 (2016) 1249–1255.
- [2] K. Yamjala, M.S. Nainar, N.R. Ramiseti, Methods for the analysis of azo dyes employed in food industry—a review, *Food Chem.* 192 (2016) 813–824.
- [3] INSO. Permitted Food Additives—food Colors—list and General Specifications. (May 2013) 5st. Edition. Retrieved from (<http://isiri.org/portal/file/?90197/740>).
- [4] INSO. Permitted Food Additives—synthetic Food Colors in Foods—identification by Thin Layer Chromatography—test Method. (December 2013). Retrieved from: (<http://isiri.gov.ir/portal/file/?149321/2634>).
- [5] H.F. Alipour, H.F. Mahdavi, Determine the prevalence of food contamination to synthetic colors with thin layer chromatography in Shahrekord, Shahrekord Univ. Med. Sci. J. 17 (2016) 103–112.
- [6] F. Farzianpour, G.J. Khaniki, M. Younesian, B.B. Ghahferkhi, M. Sadeghi, S. Hosseini, Evaluation of food color consumption and determining color type by thin layer chromatography, *Am. J. Appl. Sci.* 10 (2013) 172.
- [7] Z. Moradi-Khatoonabadi, M. Amirpour, M. AkbariAzam, Synthetic food colours in saffron solutions, saffron rice and saffron chicken from restaurants in Tehran, Iran, *Food Addit. Contam.: Part B* 8 (2015) 12–17.

- [8] M. Rezaei, F.S. Abadi, Z. Sharifi, F. Karimi, M. Alimohammadi, R.A.S. Abadi, et al., Assessment of synthetic dyes in food stuffs produced in confectioneries and restaurants in Arak, Iran, *Thrita* 4 (2015) e22776.
- [9] M. Soltan Dallal, S. Vahedi, A. Najjarian, A. Dastbaze, T. Kaffashi, E. Pirhadi, et al., Study of concentration of added colors to juice of black cherry and juice of barberry on display in shop in the city of Tehran, *J. Payavard Salamat* 2 (2008) 55.
- [10] A. Batada, M.F. Jacobson, Prevalence of artificial food colors in grocery store products marketed to children, *Clin. Pediatr.* 55 (2016) 1113–1119.