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Data in Brief

Data Article

Data on microbiological quality of raw cow milk in East Azerbaijan province, Iran

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ABSTRACT

Microbial contamination of milk can lead to undesirable effects on texture, color, odor, or flavor that result in shorter shelf life. It may also cause serious illnesses in consumers if it contains over than standard limit of these parameters. In this data, we evaluate the total bacterial count (TBC) and somatic cell count (SCC) of raw milk in East Azerbaijan province using BactoScan and Fossomatic equipment, respectively. According to the 30 points selected in the province map, the 10,800 samples were collected during a one-year period. Microbiological results in this data show heavy contaminations of milk samples with TBC indicator (73.6%), while SCC in only 6.4% samples were over the recommended levels by the Iranian standard. Therefore, it is necessary to take attention in order to control of these microbial parameters especially TBC during of milk production to avoid the potential risk of high microbial contamination.

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Specifications table

Subject area	*Microbiology*
More specific subject area	*Raw milk and microbial quality.*
Type of data	*Table, figure*
How data was acquired	*BactoScan (FOSS, Denmark), and Fossomatic (FOSS, Denmark) equipment*
Data format	*Raw, analyzed.*
Experimental factors	*Raw milk samples were taken from collection centers and stored within the sterile bottles at 4 °C and then transported to the laboratory. In the laboratory, the samples were maintained below 4 °C until analysis for microbial parameters [1].*
Experimental features	*Total Bacterial Count (TBC) and Somatic Cell Count (SCC) were determined using BactoScan and Fossomatic equipment respectively.*
Data source location	*East Azerbaijan province, Iran*
Data accessibility	*Data are available in this article*
Related research article	I. Stulova, S. Adamberg, T. Krisciunaite, M. Kampura, L. Blank, T.-M. Laht, Microbiological quality of raw milk produced in Estonia., Lett. Appl. Microbiol. 51 (2010) 683–90. doi:10.1111/j.1472-765X.2010.02951.x [3].

Value of the data

- TBC and SCC are the important factors to evaluation of the microbiological quality of raw milk, therefore, these data can be used for assessment of milk quality.
- Data from this research can be used for determination of the microbial quality of raw milk by the Food and Drug Administration, Iran.
- Data shown here can be useful for microbial evaluation of raw milk by the Ministry of Agriculture, Iran.

1. Data

The data available in Tables 1 and 3 show the total bacterial count (TBC) and somatic cell count (SCC) indicators of raw cow milk from 30 collection centers during 12 months respectively. In addition, the status of measured parameters is shown in Tables 2 and 4. Samples were measured during a month long period and averages were reported separately for each collection center.

2. Experimental design, materials, and methods

2.1. Study area description

The center of East Azerbaijan province is the Tabriz that located at 46°18′ 13.47″ N and 38°4′ 42.52″ E and is 1401 m above sea level. The province located in the North West of Iran Fig. 1. According to the census of Iran in 2017 the population of this province was 3,900,000 people.

2.2. Determination of microbiological contaminant in raw milk

Here, samples were collected from 30 collection centers selected in different regions of East Azerbaijan province, Iran. A total of 10,800 samples (each sample 250 ml) were taken every morning during a year from January–December 2017 to test for microbial quality. The samples were

Table 1
Mean values of TBC (Log CFU/mL) in raw milk samples.

Collection center	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	6.66	6.71	6.15	6.48	6.86	7.07	6.50	6.74	6.53	6.40	6.33	6.51
2	6.15	6.08	5.82	5.62	5.89	6.01	6.59	5.64	5.81	6.34	6.17	6.28
3	5.89	5.91	5.47	5.60	6.21	6.38	6.72	5.83	5.96	5.51	5.41	5.48
4	5.55	5.45	5.06	5.51	5.75	6.34	5.68	5.25	5.01	5.56	5.55	5.55
5	5.65	5.91	5.43	5.30	5.54	5.77	5.96	5.92	6.65	5.89	5.56	5.60
6	7.34	7.60	7.61	7.67	7.68	7.67	7.78	7.70	7.62	7.65	7.36	7.40
7	6.97	7.26	6.98	6.92	7.10	7.40	6.94	7.11	6.84	7.22	6.95	6.93
8	6.76	7.00	6.75	6.80	7.03	7.00	6.67	6.85	6.68	6.85	6.60	6.54
9	6.23	6.69	7.53	7.35	7.13	6.52	6.22	6.39	6.04	6.60	6.09	6.05
10	5.59	6.42	5.35	5.37	5.41	5.49	5.93	5.68	6.18	6.02	5.70	5.81
11	6.70	6.58	6.62	5.15	5.69	6.39	5.66	6.39	5.41	5.75	7.13	6.78
12	7.05	7.59	7.27	7.36	7.40	7.49	7.59	7.58	7.48	7.50	7.58	7.65
13	5.64	6.38	5.00	5.15	5.33	5.53	5.50	5.58	4.97	6.00	6.17	5.76
14	7.24	7.57	7.36	7.20	7.26	7.34	7.38	7.33	7.25	7.34	7.16	7.29
15	6.09	7.52	7.43	7.01	7.24	7.44	7.58	7.41	7.26	7.38	7.27	7.28
16	7.23	6.91	6.52	5.50	6.89	6.86	6.07	7.17	6.09	5.96	6.21	6.91
17	6.88	6.29	6.02	6.10	6.00	5.50	6.12	6.23	5.62	6.27	6.04	6.58
18	6.99	7.44	7.23	7.24	7.48	7.57	7.54	7.44	7.14	7.26	6.72	6.79
19	7.23	7.46	7.41	7.40	7.49	7.51	7.46	7.48	7.36	7.52	7.10	7.24
20	6.89	6.96	6.91	6.80	6.45	6.91	6.99	7.08	6.91	6.80	6.48	6.81
21	6.11	7.08	5.27	5.17	5.67	5.90	6.75	6.76	6.07	6.14	6.07	5.82
22	6.54	6.00	5.82	5.44	5.93	5.45	5.80	5.51	5.48	5.83	6.37	6.17
23	6.20	6.74	6.08	5.70	6.79	5.91	5.90	5.60	5.57	6.08	5.63	6.02
24	6.71	7.85	7.14	7.11	6.95	7.29	7.11	6.73	6.60	7.05	7.07	6.66
25	7.64	7.75	7.62	7.58	7.62	7.84	7.67	7.84	7.72	7.66	7.53	7.43
26	6.96	7.24	6.81	6.81	7.18	7.04	7.34	7.22	7.14	7.33	7.00	7.05
27	8.50	7.61	7.51	7.62	7.74	7.86	7.90	7.88	7.78	7.64	7.37	7.41
28	6.25	6.18	5.75	5.64	5.75	5.51	5.84	5.74	5.51	6.57	5.81	6.05
29	7.09	6.82	6.72	6.71	6.25	6.68	6.32	5.98	5.77	7.13	7.34	7.03
30	6.84	7.26	6.99	7.16	7.32	7.38	7.58	7.40	7.18	7.18	6.73	6.60

Table 2
Status of TBC in raw milk samples.

Milk ranking	Range (Log CFU/mL)	%
Excellent	≤ 4.48	–
First-grade	4.48–5	0.6
Second-grade	5–5.70	15.8
Third-grade	5.70–6	10.0
Non-standard	> 6	73.6

transported to the laboratory in sterile bottles at 4 °C. Then, we assessed the microbial indicators within 4 h of collection.

In the laboratory, the analyses of the milk microbial composition included TBC and SCC and the samples were divided into two vials. Then, half of the vials were used for TBC analysis by BactoScan and the other half were analyzed for SCC using the Fossomatic. According to the Institute of Standards and Industrial Research of Iran, the standard limits for TBC in raw milk were divided into four groups (excellent ≤ 4.48, First-grade 4.48–5, Second-grade 5–5.70, and Third-grade 5.70–6 $\log_{10}$ CFU/ml),

Table 3
Mean values of SCC (Log Cell/mL) in raw milk samples.

Collection center	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	5.52	5.48	5.62	5.71	5.49	5.63	5.63	5.72	5.51	5.59	5.42	5.47
2	5.38	5.60	5.15	5.21	5.35	5.27	5.29	5.71	5.39	5.41	5.43	5.32
3	5.22	5.32	5.11	4.89	5.34	5.09	5.26	4.98	5.37	5.53	5.54	5.20
4	5.37	5.22	5.11	5.46	5.32	5.31	5.26	5.11	5.03	5.06	5.09	5.24
5	5.58	5.78	5.63	5.63	5.54	5.66	5.56	5.64	5.75	5.72	5.57	5.87
6	5.17	5.25	5.38	5.28	5.17	5.34	5.43	5.78	5.35	5.58	5.33	5.30
7	5.59	5.66	5.60	5.65	5.63	5.69	5.64	5.54	5.42	5.66	5.47	5.65
8	5.48	5.51	5.43	5.52	5.45	5.53	5.43	5.40	5.36	5.43	5.42	5.43
9	5.50	5.65	5.02	5.40	5.24	5.08	5.08	5.25	5.49	5.69	5.71	5.87
10	5.55	5.82	5.33	5.39	5.27	5.29	5.25	5.07	5.24	5.44	5.52	5.64
11	5.47	5.42	5.28	5.37	5.19	5.17	5.21	5.20	5.02	5.31	5.25	5.42
12	5.79	5.66	5.42	5.42	5.35	5.51	5.53	5.56	5.57	5.60	5.38	5.60
13	5.46	5.61	5.47	5.41	5.29	5.39	5.44	5.35	5.29	5.32	5.28	5.38
14	5.41	5.44	5.18	5.34	5.29	5.40	5.19	5.13	5.11	5.50	5.30	5.34
15	6.59	5.61	5.44	5.59	5.47	5.57	5.48	5.50	5.47	5.67	5.55	5.60
16	5.59	5.56	5.41	5.53	5.36	5.30	5.31	5.42	5.31	5.30	5.47	5.60
17	5.50	5.50	5.40	5.35	5.34	5.28	5.26	5.24	5.46	5.50	5.61	5.62
18	5.39	5.35	5.52	5.54	5.46	5.40	5.45	5.44	5.40	5.57	5.33	5.36
19	5.36	5.46	5.41	5.43	5.44	5.48	5.55	5.59	5.52	5.69	5.45	5.46
20	5.85	5.77	5.67	5.78	5.44	5.62	5.30	5.40	5.44	5.41	5.15	5.61
21	5.24	5.43	5.34	5.42	5.30	5.40	5.48	5.34	5.25	5.20	4.93	5.17
22	5.71	5.84	5.41	5.55	5.40	5.37	5.42	5.27	5.42	5.38	5.50	5.50
23	5.41	5.47	4.79	5.21	5.11	5.23	5.17	5.27	5.34	5.53	5.55	5.66
24	5.64	5.43	5.72	5.76	5.63	5.64	5.79	5.44	5.74	5.64	5.51	5.54
25	5.25	5.29	5.26	5.46	5.33	5.34	5.33	5.27	5.41	5.62	5.15	5.12
26	5.31	5.23	5.24	5.31	5.24	5.44	5.52	5.31	5.54	5.60	5.55	5.25
27	5.60	5.78	5.34	5.32	5.43	5.60	5.46	5.43	5.41	5.51	5.56	5.48
28	5.09	5.38	5.33	5.48	5.20	5.31	5.33	5.50	5.65	5.61	5.46	5.24
29	5.26	5.46	5.12	5.22	5.36	5.21	5.41	5.36	5.50	5.54	5.28	5.27
30	5.56	5.35	4.75	5.07	5.15	5.27	5.17	5.17	5.30	5.11	5.39	5.48

Table 4
Status of SCC in raw milk samples.

Milk ranking	Range (Log cell/mL)	%
Excellent	≤ 5	1.4
First-grade	5–5.30	25.6
Second-grade	5.30–5.60	56.9
Third-grade	5.60–5.70	9.7
Non-standard	> 5.70	6.4

and four SCC groups (excellent ≤ 5, First-grade 5–5.30, Second-grade 5.30–5.60, and Third-grade 5.60–5.70 $\log_{10}$ cell/ml) [1–11]. Statistical analyses were carried out using SPSS software, version 22. The results of TBC and SCC were expressed as CFU/ml and Cell/ml respectively, in addition, transformed into base-10 logarithm.
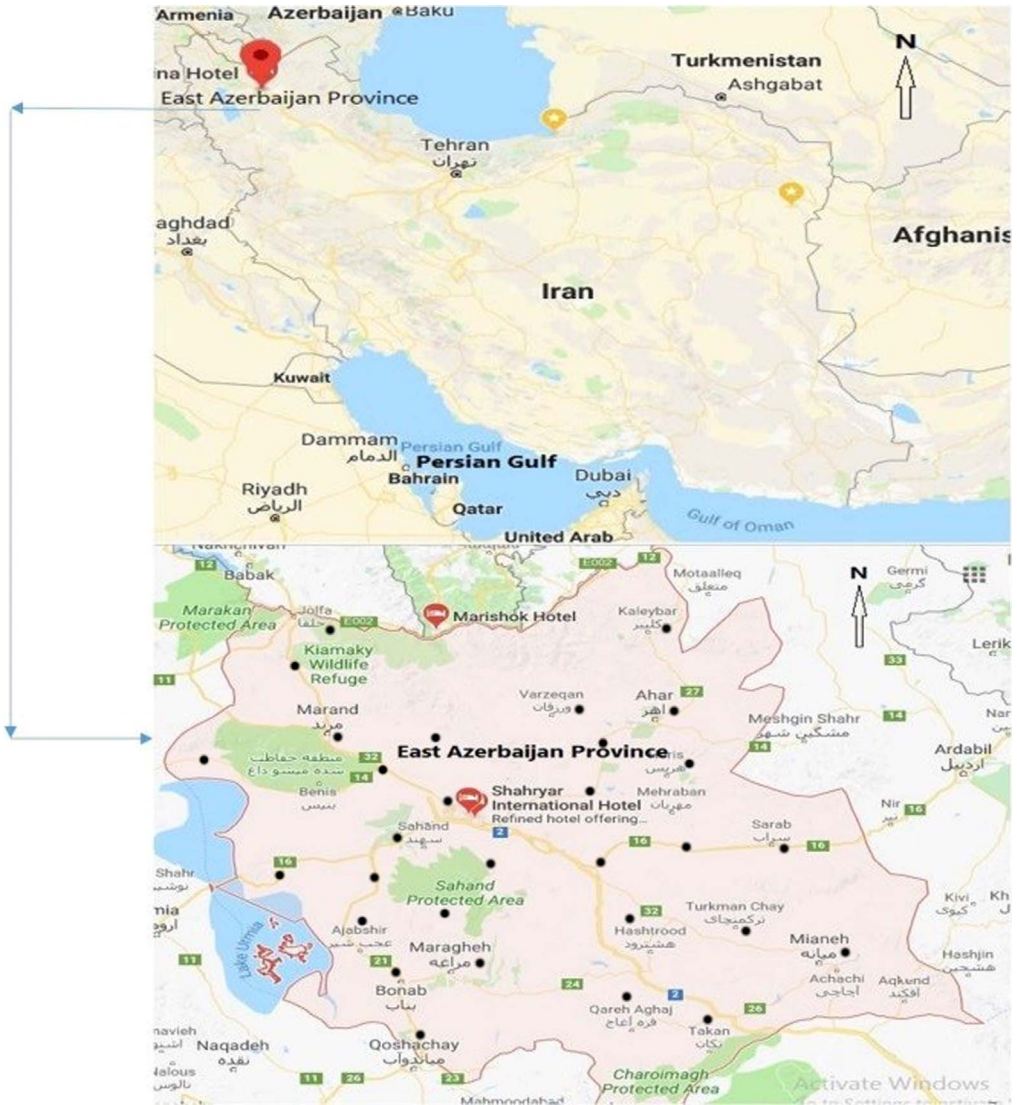
Fig. 1. Location of the study area.

Acknowledgments

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.2018.10.161.

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