



14/02/2017

Mr. Assaf Blank

CEO

Milkit

Re: Scenarios validation of using and cleaning of Milkit

Facility for pouring milk in Cafes

Dear Sir,

1. Aim

1.1 To examine different scenarios effects on microbiological quality of pasteurized milk, which is poured from Milkit facility.

2. Method

2.1 According to costumer request, 10 scenarios were tested.

2.1.1 Test after working day with continuous milk consumption.

2.1.2 Test after working day including hot cleaning with detergent.

2.1.3. Test after working day including tap water with detergent.

2.1.4 Test after working day including hot water without detergent.

2.1.5 Test after the facility was unused for half an hour.

2.1.6 Test after the facility was unused for four hours.

2.1.7 Test after the facility was not cleaned for 24 hours, but still was used for milk consumption regularly.

2.1.8 Test after the facility was not cleaned for 36 hours, but still was used for milk consumption regularly.

2.1.9 Test after the facility was not cleaned for 72 hours, but still was used for milk consumption every four hours.



2.1.10 Test after the facility was not cleaned and unused for 72h.

2.2 In order to comply the 10 scenarios Milkit supplied two independent facilities (A&B). Each facility connected to 15-liter milk bag. Milkit supplied all the equipment/materials needed for cleaning.

2.3 The standard cleaning includes two stages: One with hot water contains detergent and the second with hot water.

2.4 The tests were implemented by examining the milk. The milk was tested for total counts according to IS 526, for coliform according to IS 550 and Enterobacteriaceae according to ISO 21528. Additionally, in those scenarios, when the facility was not cleaned, the milk was tested for Listeria spp. according to FDA, Salmonella according to ISO 6579, Staph aureus coa+ according to IS 885/6 and E. coli according to ISO 16649.

2.5 Scenarios 2.1.2- 2.14 were examined by testing the first milk portion, which poured the following day.

2.6 All the tests have done in triplicates.

2.7 In addition, the last rinsing water was tested for total counts according to SM 9215B and coliforms according to SM 9222B as well.

2.8 According to costumer request, the predominant strain was identified.

3. Results and analysis

3.1 The results are documented in test laboratory certificates.



3.2 The pasteurized milk microbiological quality, which produced and packed in Tara dairy, was excellent. The microbiological quality of the milk was still excellent after connecting to the Milkit facility (see test certificates 1 and 4, lab samples 671-679, 674-682, respectively).

3.3 Scenario 2.1.1 was examined in both facilities A and B (see test certificates 1 and 4, lab samples 683-685, 686-6688, respectively). In facility B, pseudomonas sp. was identified, while in facility A, the milk was normal. In my opinion, this was localized contamination.

3.4 Scenarios 2.1.2, 2.1.3 and 2.1.4 examined in facility B. The last rinsing water was normal in all scenarios (see test certificate 4, lab number 689, test certificate 5, lab number 705, certificate 6, lab number 715). The milk, which tested the following day, was excellent for all scenarios (see test certificate 6, 7 and 5, lab number 706-708, 715-717 and 693-695, respectively). The hot water temperature was around 70°C; the tap water temperature was about 22°C.

3.5 Scenarios 2.1.5 and 2.1.6 examined in facility B. The milk microbiological quality was excellent.

3.6 Scenarios 2.1.7-2.1.9 were tested in facility A. High total counts were revealed in the milk, some were above the Israeli standard limit. In most cases, the predominant bacterium was presumptive *Bacillus cereus*. Most probably, the source is the milk. The reason for the development of high counts is due to the milk leftover in the facility, which was not cleaned for 24 hours. Since the consumption of the milk in the first day was seldom, comparing the following day, the counts in the following day were lower by one log. Regularly, in all sampling times, the first milk portion within the triplicates was with highest counts comparing the following two milk portions. This phenomenon is because the first milk, which pumped from the milk bag, is flashing the leftover milk in the facility. The precise location is hard to say, but I assume that the pouring valve is the location, which milk leftover accumulates. However, pathogens



tested in those scenarios not detected (see test certificates 2 and 3, lab numbers 690-701 and 710-712, respectively).

3.7 Scenario 2.1.10 was performed in facility B. Facility B was cleaned with standard cleaning. Afterwards, the one portion of milk was poured. Then, the facility was not used and cleaned for 72 hours. Then, milk was examined and was not suitable for public health consumption (see test certificate 7 lab number 718-720).

3.8 For the analysis above, it is important to note that the cleaning process does not include the silicon hose tube, which connects to milk bag. This is another factor in the equation, which we did not test. It is essential to make sure that in the pipe there is no microbial development.

3.9 According to the customer request, the Facility A was cleaned double standard cleaning after the facility was not cleaned for 72 hours.

4.0 Discussion and conclusions

4.1 As long as the cleaning is done after 24 hours, even if it is not used frequently, the microbiological milk quality is proper.

4.2 Uncleaning after 24 hours when the consumption was on a regular use basis, can lead to microbiological development, however the counts are not exceptional.

4.3 As time passes the final cleanup of 72 hours, microbial development continues and can bring exceptions from the Israeli standard in total counts.

4.4 Facility that was not cleaned at the end of the day and later, the first portion, which is poured on the day after, will have the highest counts comparing to the next poured portions.



4.5 Based on sections 4.1-4.4. The suction hose, container and tap pouring may be microbial development zones. In my opinion, the tap pouring is the main area, but this assumption has to be proven.

4.6 The cleaning process is configured correctly. It is also cleans when using tap water with detergent. The milk, which tested the following day, was normal.

4.7 Using frequently the facility through the day, reducing the possibility for microbial development.

4.8 In the case, which the facility was not used for 72 hours, the milk, which poured after this time, will not be proper for consumption.

4.9 As mentioned above, on the basis of article 4.5, all the particles are going through the cleaning process, can be a potential source for microbial development. However, section 3.8 has to be considered as an additional area source for microbial development, nevertheless the milk, which was poured the following day, was right in all cases.

4.10 The use of Milkit facility is safe for public health as long as keep the producer instructions and cleaning process and the pasteurized milk and the water used are meet the requirements of the law.

5.0 Recommendations

5.1 It is recommended performing daily cleaning at the end of the day's work, especially, the facility is not used often.

5.2 It is not recommended allowing the facility be unclean for 72 hours (i.e. weekend). Additionally, if cleaning performed and after cleaning, milk portion

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was poured, and the facility was not cleaned afterwards for 72 hours, additional cleaning should perform before using.

5.3 On the basis of article 4.5, it is recommended to consider the main area for microbial development in the facility.

5.4 On the basis of Article 4.9, it is recommended to make sure the silicone hose tube connected to milk bag does not cause a risk to the development of microbial development.

Regards,

Dr. Ariel Maoz
Project manager

Regards,

Dr. Irit Weiser
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