

Table S1. Results of chemical analyses of bulk tank raw milk.

Bulk tank raw milk	
Casein (%) ¹	2.51
Fat (%) ¹	3.31
Lactose (%) ¹	4.85
Protein (%) ¹	3.22
Chlorides (mg/mL) ²	0.680
Urea (mg/dL) ¹	26.7
Inhibiting substances ³	absent
Aflatoxin M ₁ (µg/Kg) ⁴	≤ 0.03
pH ⁵	6.57
Freezing point (m°C) ¹	-0.523
Total bacteria count (x 1000 CFU/mL) ⁶	9
Somatic cell count (x 1000 cells/mL) ⁷	235

¹ Test method POS CIP 018 INT rev 11 2015 (Infrared Spectroscopy). ² Potentiometric titration. ³ AFNOR DSM 28/02 – 02/12 (Delvotest T). ⁴ Test method POS CHI 038 INT rev 5 2015 (ELISA kit). ⁵ Test method POS CIP 009 INT rev 7 2015 (Potentiometry). ⁶ Test method POS CIP 021 INT rev 5 2015 (fluoro-opto-electronic counting). ⁷ Test method POS CIP 018 INT rev 11 2015 (fluoro-opto-electronic counting).

Table S2. Chemical composition of commercial UHT milk

Composition¹	Microfiltered full fat UHT milk	Microfiltered semi-skimmed UHT milk	Microfiltered skimmed UHT milk
Total Fat (%w/v)	3.6	1.6	/
Saturated fat (%w/v)	2.5	1.1	/
Carbohydrates (%w/v)	5.0	5.0	5.1
Protein (%w/v)	3.3	3.3	3.4
Sodium (%w/v)	0.10	0.10	0.10

Table S3. Chemical analyses of livestock drinking water.

Livestock drinking water	
pH ¹	7.24
Electrical conductivity @ 20°C (µS/cm) ²	634
Total dissolved solids (mg/L) ³	443
Ammonia-nitrogen (mg/L) ⁴	<0.03
Iron (µg/L) ⁵	<20
Total hardness (°F) ⁶	23.4
Nitrites (mg/L) ⁷	<0.3
Nitrates (mg/L) ⁸	4.1
Sulphates (mg/L) ⁷	26
Chlorides (mg/L) ⁹	10.4
Fluorides (mg/L) ⁹	<0.3
Free active chlorine (mg/L) ¹⁰	<0.03
Manganese (mg/L) ¹¹	<0.005
Copper (mg/L) ¹²	<0.01
Zinc (mg/L) ¹³	<0.005
Cadmium (mg/L) ¹⁴	<0.0005
Lead (mg/L) ¹⁵	<0.001
Mercury (mg/L) ¹⁶	<0.0003
Nickel (mg/L) ¹⁷	<0.002
Arsenic (mg/L) ¹⁸	<0.005
Chrome (mg/L) ¹⁹	<0.001
Organophosphate pesticides (mg/L) ²⁰	<0.01

Organochlorine pesticides (mg/L) ²⁰	<0.01
Total coliforms (CFU/100 mL) ²¹	absent

¹ Test method APAT CNR IRSA 2060 Man 29 2003. ²Test method APAT CNR IRSA 2030 Man 29 2003. ³Test method MIC 002/NS rev.1:2009. ⁴Test method APAT CNR IRSA 4030 A2 Man 29 2003. ⁵Test method APAT CNR IRSA 3160 B Man 29 2003. ⁶Test method APAT CNR IRSA 2040 B Man 29 2003. ⁷Test method APAT CNR IRSA 4020 Man 29 2003. ⁸Test method UNI EN 12014-4:2005. ⁹ Test method APAT CNR IRSA 4020 Man 29 2003. ¹⁰ Test method APAT CNR IRSA 4080 Man 29 2003. ¹¹ Test method APAT CNR IRSA 3010 A Man 29 2003 + APAT CNR IRSA 3190 B Man 29 2003. ¹² Test method APAT CNR IRSA 3010 A Man 29 2003 + APAT CNR IRSA 3250 B Man 29 2003. ¹³ Test method APAT CNR IRSA 3010 A Man 29 2003 + APAT CNR IRSA 3320 A Man 29 2003. ¹⁴ Test method APAT CNR IRSA 3010 A Man 29 2003 + APAT CNR IRSA 3120 B Man 29 2003. ¹⁵ Test method APAT CNR IRSA 3010 A Man 29 2003 + APAT CNR IRSA 3230 B Man 29 2003. ¹⁶ Test method APAT CNR IRSA 3010 A Man 29 2003 + APAT CNR IRSA 3200 A2 Man 29 2003. ¹⁷ Test method APAT CNR IRSA 3010 A Man 29 2003 + APAT CNR IRSA 3220 B Man 29 2003. ¹⁸ Test method APAT CNR IRSA 3010 A Man 29 2003 + APAT CNR IRSA 3080 A Man 29 2003. ¹⁹ Test method APAT CNR IRSA 3010 A Man 29 2003 + APAT CNR IRSA 3150 B1 Man 29 2003. ²⁰ Test method APAT CNR IRSA 5100 Man 29 2003. ²¹ Test method ISO 9308-1:2017.

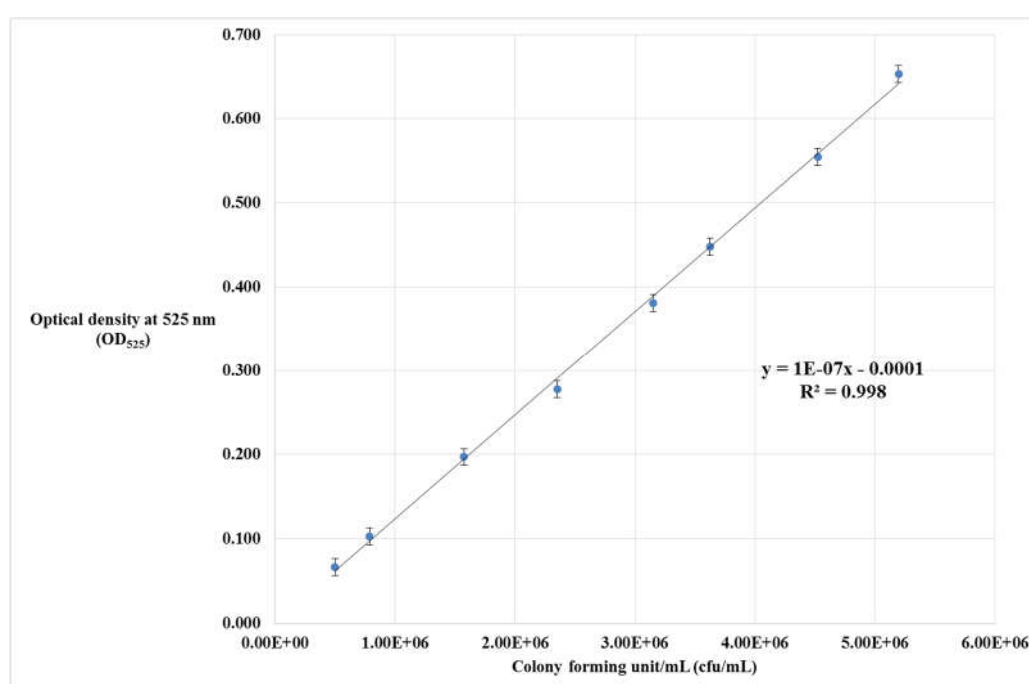


Figure S1. Calibration curve of OD_{525nm} vs. cfu/mL. Each point represents a mean value of five replicate tests (%RSD < 5%).

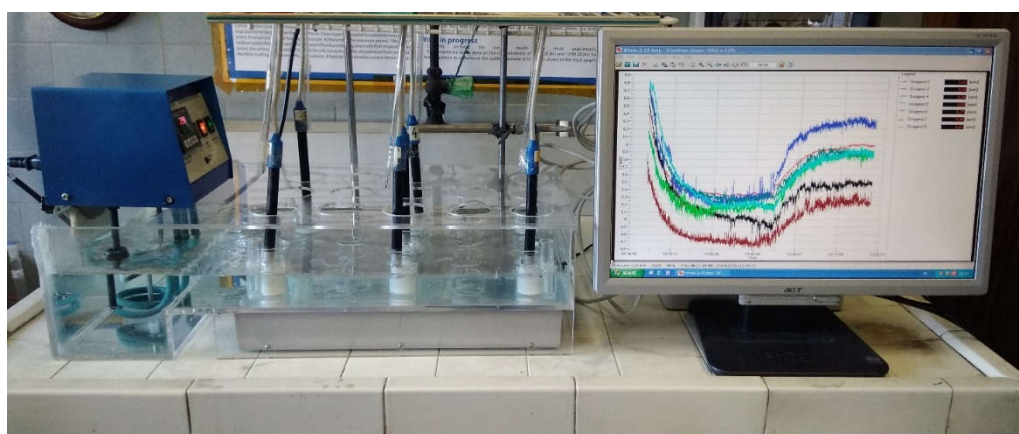


Figure S2. Photograph of the system used for bioassays.