

## MILK TESTING

In current times, dairy is the highest-ranking good in India. The dairy industry has always been a full-on demand sector as these are consumed by people on a daily basis.

Milk and milk products have long been known to be excellent sources of protein, particularly calcium, vitamins, minerals, casein, and carbohydrates for people of all ages, including adults.

Milk is one of the most unpreserved food commodities as it acts as a great medium for the growth of microorganisms. Some microbes can be pathogenic and cause serious health problems to consumers. This stresses the fact that these infective microorganisms need to be killed or inactivated in order to be consumed safely and to prevent food-borne infections. The concept of processed milk is treated with pasteurization, homogenization, sterilization, ultra-processing, and other thermal and non-thermal techniques.

Consumption of raw or unpasteurized milk has been linked to food-borne infection, specifically by *Campylobacter*, Shiga toxin-producing *Escherichia coli* and *Salmonella enterica* serotype Typhimurium.

Therefore, food safety may be a serious reason for concern for the dairy industry and this increases the demand for processed milk and dairy products all over the globe.

### SAFETY REGULATION/ CERTIFICATION

- Food Safety and Standards (Food Products Standards and Food Additives) Regulations, 2011.
- Bureau of Indian Standards (BIS)
- Prevention of Food Adulteration Act (PFA)
- Milk and Milk Products Order (MMPO)
- Food and Drug Administration (FDA)
- Agricultural Produce (Grading and Marking) Act (AGMARK)
- Food Safety System Certification (FSSC 2200)
- British Retail Consortium (BRC)
- International Featured Standards (IFS)
- Global Food Safety Initiative (GFSI)

### WHY US

Eureka offers a wide range of adulteration in milk & dairy products testing like detergent, foreign fat, starch, sodium hydroxide (caustic soda), sugar, urea, water, salt, maltodextrin, sodium carbonate, formalin, and ammonium sulphate and many as listed below.

DISCIPLINE	PARAMETER	MRL
Milk - Low Lactose milk	Lactose	Shall have less than 1% Lactose
Milk - Lactose free milk	Lactose	Shall have less than 0.1% Lactose
Milk -Proximate	Description	Visual
Milk - Adulterant	Cane Sugar	Qualitative
Milk - Adulterant	Detection of Starch	Qualitative
Milk - Adulterant	Detection of Cellulose	Qualitative
Milk - Adulterant	Detection of Added Urea, Max	700 mg/kg
Milk - Adulterant	Detection of Ammonium compound	Qualitative
Milk - Adulterant	Presence of Sulphates	Qualitative
Milk -Adulterant	Detction of Added Glucose	Qualitative
Milk - Adulterant	Detection of Sodium chloride	Qualitative
Milk - Adulterant	Presence of Foreign Fat in milk	Qualitative
Milk - Adulterant	Detection of Nitrate (Pond water)	Qualitative
Milk - Adulterant	Detection of Neutralizers	Qualitative
Milk - Adulterant	Detection of Hypochloride and chloramines	Qualitative
Milk - Adulterant	Quaternary ammonium compounds	Qualitative
Milk - Adulterant	Presence of Anionic detergent	Qualitative
Milk - Adulterant	Presence of Skimmed milk powder in Natural milk	Qualitative
Milk - Adulterant	Detection of Gelatine in Milk	Qualitative
Milk - Adulterant	Presence of Formalin	Qualitative
Milk - Adulterant	Presence of Hydrogen peroxide	Qualitative
Milk - Adulterant	Presence of Boric acid and Borate	Qualitative
Milk - Adulterant	Presence of Salicylic acid	Qualitative
Milk - Proximate (Buffalo Milk)	Minimum Milk Fat (per cent, m/m)	6.0 5.0
Milk - Proximate (Buffalo Milk)	Minimum Milk Solids- not-Fat (SNF) (percent, m/m)	9.0
Milk - Proximate	Sodium Content, Max	650 mg/100gm SNF
Milk- Additives	Phosphates, Max mg/kg	1,500
Milk - Metals	Lead, Max mg/kg	0.02
Milk - Metals	Copper, Max mg/kg	30.0
Milk - Metals	Arsenic, Max mg/kg	0.1
Milk - Metals	Tin, Max mg/kg	250
Milk - Metals	Cadmium, Max mg/kg	1.5
Milk - Metals	Mercury, Max mg/kg	1.0
Milk - Metals	Methyl Mercury (Calculated as the element), Max mg/kg	0.25
Milk - Pesticides	2,4-Dichlorophenoxy Acetic Acid, Max mg/kg	0.05
Milk - Pesticides	Acephate (expressed as mixture of Methamidophos and acephate)	0.02
Milk - Pesticides	Acetamidprid, Max mg/kg	0.02
Milk - Pesticides	Azoxystrobin, Max mg/kg	0.01
Milk - Pesticides	Sum of benomyl and carbendazim expressed as carbendazim, Max mg/kg	0.1 (F)
Milk - Pesticides	Bifenthrin, Max mg/kg	0.2
Milk - Pesticides	Bitertanol, Max mg/kg	0.05
Milk - Pesticides	Buprofezin, Max mg/kg	0.01
Milk - Pesticides	Carbaryl, Max mg/kg	0.05
Milk - Pesticides	Carbendazim, Max mg/kg	0.1 (F)

DISCIPLINE	PARAMETER	MRL
Milk - Pesticides	Carbofuran (sum of carbofuran and 3-hydroxy carbofuran expressed as carbofuran)	0.05 (fat basis)
Milk - Pesticides	Chlorantraniliprole	0.05
Milk - Pesticides	Chlorothalonil, Max mg/kg	0.07
Milk - Pesticides	Chlorpyrifos, Max mg/kg	0.02
Milk - Pesticides	Chlothianidin (Chlothianidin and its metabolites), Max mg/kg	0.02
Milk - Pesticides	Cypermethrin (sum of isomers) (Fat soluble residue), Max mg/kg	0.05
Milk - Pesticides	Deltamethrin (Decamethrin)	0.05
Milk - Pesticides	Dichlorvos (DDVP) (content of di- chloroacetaldehyde (D.C.A.) be reported where possible)	0.01
Milk - Pesticides	Difenoconazole, Max mg/kg	0.02
Milk - Pesticides	Dimethoate, Max mg/kg	0.05
Milk - Pesticides	Dinotefuran, Max mg/kg	0.1
Milk - Pesticides	(c) Mancozeb, Max mg/kg	0.05
Milk - Pesticides	(d) Metiram as CS2, Max mg/kg	0.05
Milk - Pesticides	Edifenphos, Max mg/kg	0.01
Milk - Pesticides	Emamectin Benzoate, Max mg/kg	0.01
Milk - Pesticides	Ethion(Residues to be determined as ethion and its oxygen analogue and expressed as ethion),	0.5 (F)
Milk - Pesticides	Ethofenprox (Etofenprox)	0.02
Milk - Pesticides	Fenpropathrin	0.1
Milk - Pesticides	Fenvalerate (Fat soluble residue), Max mg/kg	0.01 (F)
Milk - Pesticides	Fipronil, Max mg/kg	0.02
Milk - Pesticides	Flubendiamide, Max mg/kg	0.1
Milk - Pesticides	Flusilazole, Max mg/kg	0.05
Milk - Pesticides	Glufosinate Ammonium, Max mg/kg	0.02
Milk - Pesticides	Imidacloprid, Max mg/kg	0.1
Milk - Pesticides	Indoxacarb, Max mg/kg	0.1
Milk - Pesticides	Kresoxim Methyl, Max mg/kg	0.01
Milk - Pesticides	Methomyl, Max mg/kg	0.02
Milk - Pesticides	Methyl Chlorophenoxy Acetic Acid (MCPA), Max mg/kg	0.04
Milk - Pesticides	Metolachlor, Max mg/kg	0.01
Milk - Pesticides	Monocrotophos, Max mg/kg	0.02
Milk - Pesticides	Oxydemeton-Methyl, Max mg/kg	0.01
Milk - Pesticides	Paraquat dichloride (Determined as Paraquatcations), Max mg/kg	0.01
Milk - Pesticides	Penconazole, Max mg/kg	0.01
Milk - Pesticides	Phenthoate, Max mg/kg	0.01 (F)
Milk - Pesticides	Phorate (sum of Phorate, its oxygen analogue and their sulphoxides and sulphones, expressed as phorate)	0.05 (F)
Milk - Pesticides	Pirimiphos-methyl, Max mg/kg	0.05 (F)
Milk - Pesticides	Propiconazole, Max mg/kg	0.01
Milk - Pesticides	Pyraclostrobin, Max mg/kg	0.03
Milk - Pesticides	Tebuconazole, Max mg/kg	0.01
Milk - Pesticides	Thiacloprid, Max mg/kg	0.05
Milk - Pesticides	Thiamethoxam, Max mg/kg	0.05
Milk - Pesticides	Thiophanate-Methyl, Max mg/kg	0.05
Milk - Pesticides	Trichlorfon, Max mg/kg	0.05
Milk - Pesticides	Triaccontanol, Max mg/kg	0.01

Milk - Pesticides	Triadimefon, Max mg/kg	0.01
Milk - Antibiotics	Sulfadiazine	0.01
Milk - Antibiotics	Sulfadimidine	0.025
Milk - Antibiotics	Trimethoprim	0.01
Milk - Antibiotics	Sulphaquinoxaline	0.01
Milk - Antibiotics	Sulfanilamide	0.01
Milk - Antibiotics	Chlortetracycline/Oxytetracycline/ Tetracycline	0.1
Milk - Antibiotics	Ampicilin	0.01
Milk - Antibiotics	Ceftiofur	0.1
Milk - Antibiotics	Cefpactril	0.01
Milk - Antibiotics	Neomycin	1.5
Milk - Antibiotics	Spectinomycin	0.2
Milk - Antibiotics	Lincomycin	0.15
Milk - Antibiotics	Apramycin	0.01
Milk - Antibiotics	Monensin	0.002
Milk - Antibiotics	Tyvalosin Tartarate	0.1
Milk - Antibiotics	Virginiamycin	0.01
Milk - Antibiotics	Albendazole	0.1

Milk - Antibiotics	Doramectin	0.015
Milk - Antibiotics	Flunixin Meglumine	0.01
Milk - Antibiotics	Ivermectin	0.01
Milk - Antibiotics	Meloxicam	0.01
Milk - Antibiotics	Febanatel/Fenbendazole/Oxyfendazole	0.1
Milk - Antibiotics	Oxyclozanide	0.01
Milk - Antibiotics	Parbendazole	0.01
Milk - Antibiotics	Praziquantel	0.01
Milk - Antibiotics	Sulpha Chloropyrazine sodium	0.01
Milk - Antibiotics	Thiabendazole	0.1
Milk - Antibiotics	Diminazene	0.15
Milk - Contaminant	Melamine, Max mg/kg	2.5
Milk- Microbiological requirement	Aerobic Plate Count	
Milk- Microbiological requirement	Coliform Count	
Milk- Microbiological requirement	Staphylococcus aureus (Coagulase positive)	
Milk- Microbiological requirement	Yeast and Mold Count	
Milk- Microbiological requirement	Escherichia coli	
Milk- Microbiological requirement	Salmonella sp.	

Milk- Microbiological requirement	Listeria monocytogenes	
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## RISK FACTORS

Milk acts as an excellent growth medium for a variety of both pathogenic and non-pathogenic microorganisms. It's the protein in milk that makes it unique and makes it listed among the "Great Eight" foods that account for 90% of all food-allergy reactions in the US. It is essential to ensure good manufacturing practises (GMP) and good hygienic practises (GHP) throughout the manufacturing of a product. Hence, safety measures for milk and dairy products should be operational right from the farm to the final processing technique.

Eureka fulfil the need for reliable and traceability, for the analysis of Milk/ Milk products. Milk and Milk products authentication helps manufacturers/ suppliers and retailers to appropriately specify manufacture of products, chemical management, risk assessment and testing to complete milk certification of products.