

Laboratory Experiments on Dairying



Created by: Dr. Maeve Liston

Senior Projects Officer in Biological Sciences

**National Centre for Excellence in Science and
Mathematics Teaching and Learning**

Maeve.liston@ul.ie

	Cow	Buffalo	Goat	Ewe	Camel
Water	87.4	82.2	86.8	81.6	87.4
Fat	3.9	7.5	4.5	7.5	3.7
Protein	3.3	4.8	3.3	5.6	3.5
Lactose	4.5	4.7	4.4	4.4	4.6
Minerals	0.9	0.8	1.0	0.9	0.8

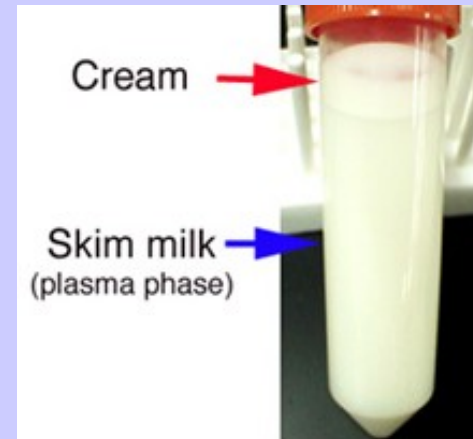
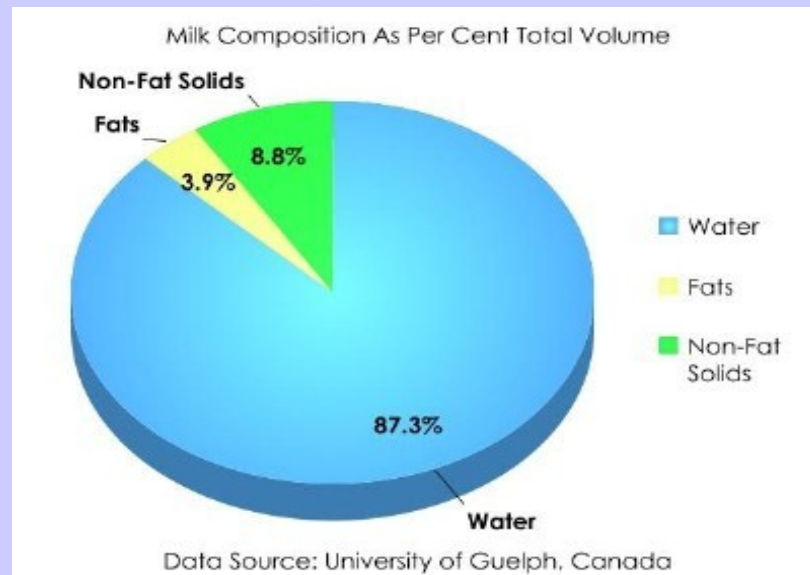


NCE-MSTL

Minerals in Milk	
Potassium	28%
Phosphorus	27%
Calcium	20%
Sodium	8%
Magnesium	3%
Iron	1%
Others	1%
Chlorine	12%
	NCE-MSTL



It is illegal to sell milk with less than 3% butter fat or less than 8.5% other solids (non-fat).



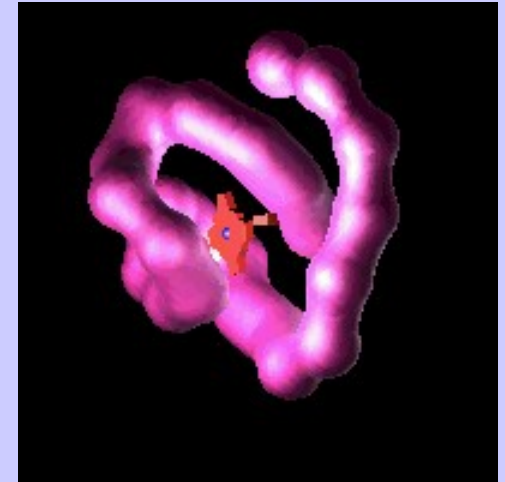
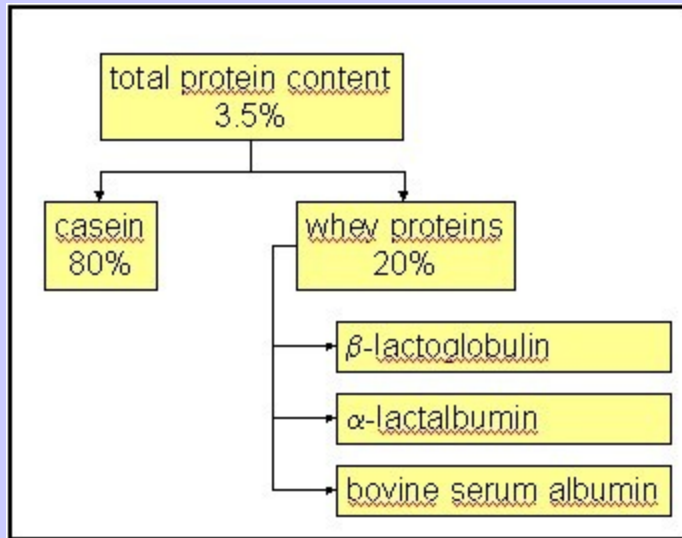
To test milk for fat



	Observation
Water	
Milk	



NCE-MSTL



To test milk for proteins

Biuret test

Sample	Initial colour	Final colour

NCE-MSTL



NCE-MSTL

Milk analysis before being processed

Experiment 1: Resazurin test

Colour of Sample:	Quality of Milk
Blue (no colour change):	Excellent
Blue to deep mauve	Good
Deep mauve to deep pink	Fair
Deep pink to whitish pink	Poor
White	Bad



Milk analysis before being processed

Experiment 1: Resazurin test



Experiment 2

Estimation of milk pH by indicator



Experiment 3

Alcohol test



75% alcohol solution.

Milk that contains more than 0.21 % acid, or calcium and magnesium compounds in greater than normal amounts, will coagulate when alcohol is added



Experiment 4

Determination of milk acidity

- The percentage of acid present in dairy products at any time is a rough indication of the age of the milk and the manner in which it has been handled.

- 1% alcoholic solution of phenolphthalein.

- % titratable acidity/Percent lactic acid =
$$\frac{\text{ml} \times M \times 90 \times 100}{V \times 1000}$$

ml : ml of 0.1 NaOH

M : Molarity of NaOH

V : ml of milk solution used

90 : MW of lactic acid $\text{CH}_3 - \text{CHOH} - \text{COOH}$

