

.Appendix .1 : Definitions of main fatty acids

Common name	Identification	Nomenclature
Myristic	C14:0	Tetradecanoic
Palmitic	C16:0	Hexadecanoic
Stearic	C18:0	Octadecanoic
Palmitoleic	C16:1 , n-7 Cis	hexadecanoic -9
Oleic	C18:1 , n-9 Cis	(octadecenoic(cis -9
Elaidic	C18:2 , n-9, 12 Cis	9,12 (octadecenoic(trans
Linoleic	C18:3 , n-9, 12 , 15 Cis	9,12,15 octadecatrienoic
Arachidonic	C20:4 , n-5, 8 , 11, 14 Cis	-5,8,11,14 eicosatetraenoic

.Source: **Wiseman, 1984**

**Appendix .2 : Energetic value (Kcal/kg) of different vegetable oils
and animal fats**

Oil/fat	Gross energy	ME ₁	ME ₂	AME	TME
Acid soybean	9.231	7.800	8.100	—	—
Canola	9.438	—	—	8.826	9.130
Coconut	9.229	6.500	7.800	8.330	—
Dend	9.400	—	—	—	8.817
Corn	9.390	—	—	8.886	9.250
Palm	—	7.200	8.000	—	—
Soybean (DSO	9.415	—	—	8.790	9.200
Poultry fat	9.334	8.200	9.000	8.817	9.159
Lard	9.322	—	—	7.594	—
Beef Tallow	9.414	7.400	8.000	7.374	8.116
Fish	—	8.600	9.000	—	—
DSO+bovine (1:1	9.367	—	—	8.216	—
DSO + (Coconut (1:1	—	—	8.082	—	—

. DSO = Degummed soybean oil

. ME₁ = Bird Metabolizable energy until 3 weeks

. ME₂ = Birds metafter 3 weeks

. AME = Apparent metabolizable energy

. TME = True metabolizable energy

Sources : **Butolo , 2002 ; Nascif et al. , 2004 and Lara , 2004**

.Appendix .3 : Chemical analyses of beef tallow and cotton seed oil

Parameters	Unit	Beef tallow	Cotton oil
Moisture	%	0.5	0.5
Total fatty acids	%	94	98
Tirtre of fatty acids	(C°)	(37-47)	(30-38)
Free fatty acids	%	4	4
Unsaponifiable matter	%	0.2-1	1.5
Saponifucation value	%	190-200	189-190
Iodine value	g/100g	34-47	99-115
Peroxide value	Meq/1000g	10	10
Density	(g/ml(at 40 C°	(896-912)	(Sel 918)(916-926)
Refractive index	(at 40 C°)	(Sel 458)(450-459)	(Sel 471)(465-473)
Special test			Halphen test

.(Source: Coks and Rede (1966

Appendix .4 : Weekly average maximum and minimum air temperature during the period December 12th 2005 to January 29th 2006

Weeks	Max.temp.°C	Min.temp.°C
1	36.3	21.0
2	35.0	20.0
3	31.2	19.0
4	30.0	15.0
5	31.0	16.2
6	30.0	14.1
7	29.1	13.0
Average	31.8	16.9

.Source: Shambat Meteorological station