Biolab Medical Unit

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Biolab reference: RYYI/GNXX/B16
Date: 02-02-2016
Your reference:
Doctor: Glenville Nutrition Ireland

Patient: SAMPLE PATIENT
DOB: 01-02-1974
Sex: FEMALE
Sample Date: 02-02-2016

Plasma and Red Cell Elements

Element	Result	Units	Reference interval
Plasma:			
Calcium	2.24	mmol/L	2.10 - 2.60
Chromium	5.9	nmol/L	6.2 - 33.4
Copper	14.2	µmol/L	12.5 - 25.0
Iron (Female)	16.8	µmol/L	10.7 - 32.0
Magnesium	0.75	mmol/L	0.70 - 1.00
Manganese	11.6	nmol/L	9.0 - 40.0
Selenium	0.93	µmol/L	1.00 - 1.90
Zinc	10.1	µmol/L	11.5 - 20.0
Red Cells:			
Red Cell Magnesium	1.98	mmol/l	2.08 - 3.00

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Serum Vitamins

Vitamin:	Result:	Units:	Reference range
RETINOL (Vitamin A)	1.15	µmol/L	1.05 - 2.80
ALPHA-CAROTENE	0.28	µmol/L	0.30 - 1.50
BETA-CAROTENE	0.34	µmol/L	0.40 - 3.00
VITAMIN C	39	µmol/L	34 - 114
ALPHA-TOCOPHEROL (Vitamin E)	30	µmol/L	25 - 60
GAMMA-TOCOPHEROL (Vitamin E)	1.65	µmol/L	2.0 - 8.5

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Reference: **RYYI/GNXX/B16** DOB: **01/02/1974**
Patient: **Sample Patient**
Clinician: **Glenville Nutrition Ireland** Sex: **Female**
Clinician's reference: Date: **02/02/2016**

Vitamin D Profile

			Reference range
Vitamin D3 (cholecalciferol)	**49**	nmol/L	
Vitamin D2 (ergocalciferol)	**3**	nmol/L	(not present unless supplemental ergocalciferol has been consumed).
Total 25-hydroxy vitamin D	**52**	nmol/L (0 µg/L)	75 - 200 nmol/L (30 - 80 µg/L)

Comments:

Notes:

The serum concentration of 25-hydroxy vitamin D is the most sensitive and useful index of vitamin D status and correlates well with the plasma parathyroid hormone concentration and alkaline phosphatase activity. There is a two-fold seasonal variation in 25-hydroxy vitamin D in temperate regions of the globe.

For healthy subjects, with no medical condition and normal sun exposure, the serum reference interval for 25-hydroxy vitamin D is 75 – 200 nmol/L (30 – 80 µg/L).

The treatment target for subjects with medical conditions that may be associated with vitamin D deficiency is a serum range of 125 – 150 nmol/L (50 – 60 µg/L).

Vitamin D levels in supplemented individuals should be monitored carefully during the summer, when endogenous synthesis of vitamin D is at its maximum.

Vitamin D2, which is of plant origin, is the form contained in certain supplements. Total 25-hydroxy vitamin D can be taken as the sum of 25-hydroxy D3 and 25-hydroxy D2. Most subjects have very low levels of vitamin D2 in comparison to D3.

References:

1. Holick MF. Deficiency of sunlight and vitamin D. BMJ 2008;336:1318-1319.
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3. Holick MF. Sunlight and vitamin D for bone health and prevention of autoimmune diseases, cancers, and cardiovascular disease. Am J Clin Nutr 80:1678-1688S, 2004.
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5. Morris HA. Vitamin D: a hormone for all seasons - how much is enough? Clin Biochem Rev 2004; 26: 21-32.

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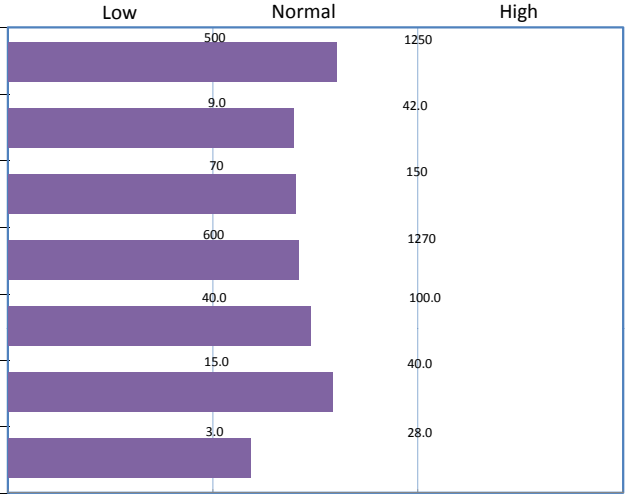
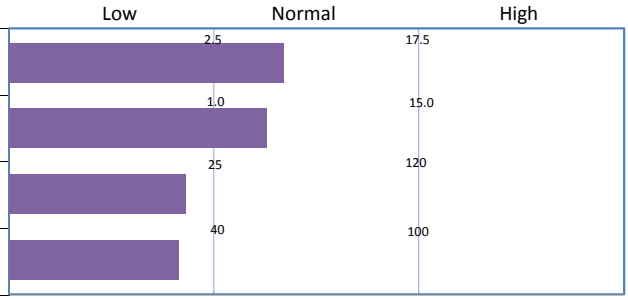
Erythrocyte Fatty Acids

(fatty acid composition of erythrocytes reported as μmol/L of red blood cells)

	Result	Reference interval	
ω-6 Fatty Acids	μmol/L	Low	High
LA Linoleic acid	**950**	500	1250
GLA Gamma-linolenic acid	**22.0**	9.0	42.0
DGLA Dihomo-gamma-linolenic acid	**102**	70	150
AA Arachidonic acid	**879**	600	1270
Adrenic Acid	**68.4**	40.0	100.0
Eicosadienoic acid	**29.6**	15.0	40.0
Docosadienoic acid	**7.5**	3.0	28.0



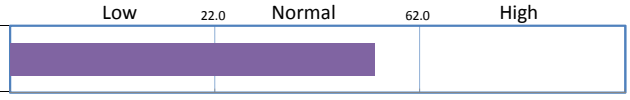
ω-3 Fatty Acids			
ALA Alpha-linolenic acid	**7.6**	2.5	17.5
ETA Eicosatetraenoic acid	**4.6**	1.0	15.0
EPA Eicosapentaenoic acid	**21**	25	120
DHA Docosahexaenoic acid	**33**	40	100



ω-5 Fatty Acids		
Myristoleic acid	**0.13**	≤1.25

ω-7 Fatty Acids		
Palmitoleic acid	**15.3**	≤60.0

Cis-vaccenic acid	**53.1**	22.0	62.0



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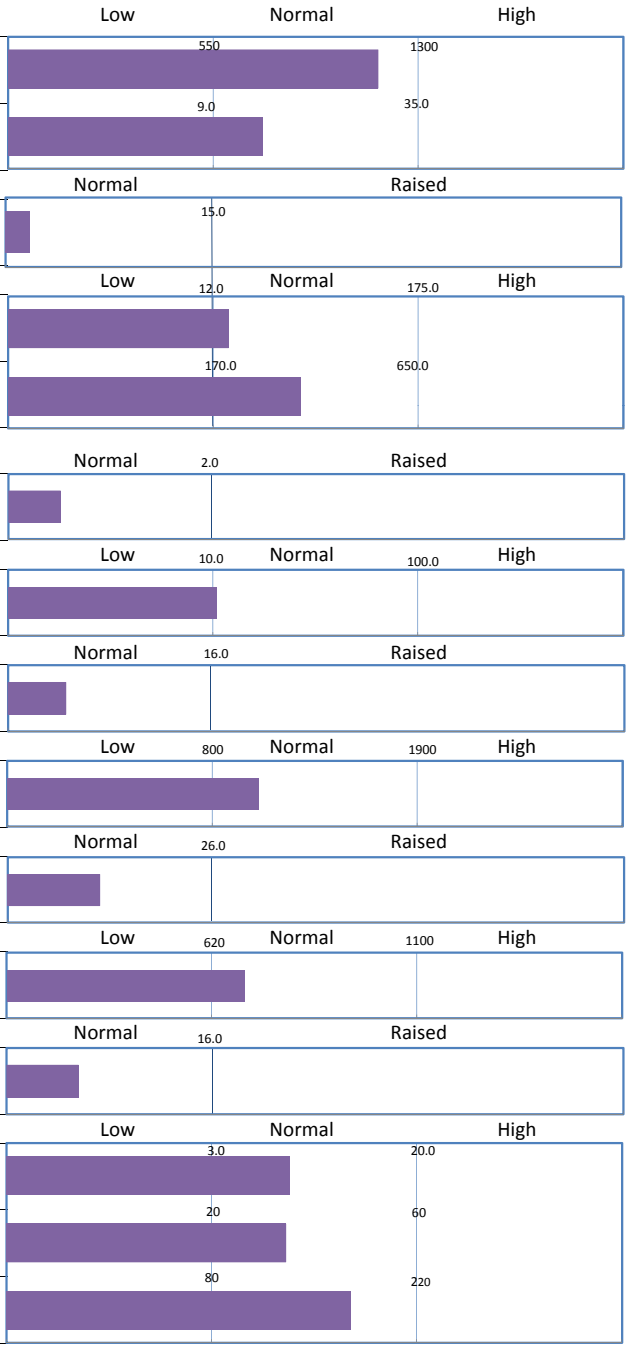
Your reference: Sex: **Female**

Date: **02/02/2016** Sample date: **02/02/2016**

Erythrocyte Essential Fatty Acids (continued)

(fatty acid composition of erythrocytes reported as µmol/L of red blood cells)

	Result	Reference interval		
ω-9 Fatty Acids	µmol/L	Low	High	
Oleic Acid	**1153**	550	1300	
Cis-11-eicosanoic acid	**15.3**	9.0	35.0	
Mead acid (20:3 n-9)	**1.8**	≤15.0		
Erucic acid	**24.2**	12.0	175.0	
Nervonic acid (24:1 n-9)	**374.0**	170.0	650.0	
Saturated Fatty Acids				
Lauric acid	**0.5**	≤2.0		
Myristic acid	**11.5**	10.0	100.0	
Pentadecanoic acid	**4.5**	≤16.0		
Palmitic acid	**1051**	800	1900	
Margaric acid	**11.7**	≤26.0		
Stearic acid	**697**	620	1100	
Arachidic acid	**5.6**	≤16.0		
Heneicosanoic acid	**9.4**	3.0	20.0	
Behenic acid	**34**	20	60	
Lignoceric acid	**175**	80	220	



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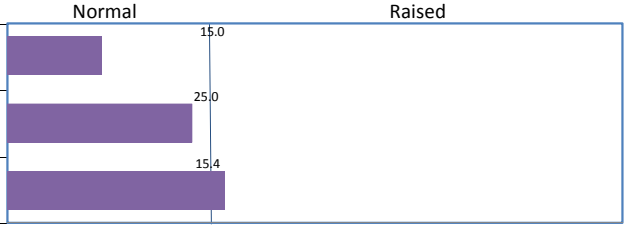
Erythrocyte Essential Fatty Acids (continued)

(fatty acid composition of erythrocytes reported as μmol/L of red blood cells)

***trans* -Fatty Acids**			Normal / Raised
Trans -vaccenic acid	**6.9**	≤15.0	15.0
Elaidic acid (*trans*)	**22.5**	≤25.0	25.0
Linolelaidic acid	**16.3**	≤15.4	15.4



Ratios	Value	Reference Interval	Comment
AA/LA	**0.93**	<1.90	
AA/EPA	**40.92**	<10.00 suggests enhanced fish or fish oil intake >30.00 suggests poor dietary intake of oily fish or fish oil	**Raised**
AA/DHA	**26.64**	12.50 - 30.0	
Omega 6 / Omega 3	**30.89**	10.00 - 32.00	
Polyunsaturated / Saturated	**1.06**	0.50 - 1.10	
Omega 3 index (total omega 3 fatty acids as a percentage of total)	**1.1%**	>4.00% suggests a high cardioprotective effect	**Low**

References

1. David F, Sandra P, Wylie PL. Improving the analysis of fatty acid methyl esters using retention time locked methods and retention time databases. Agilent application note 5988-5871EN, Agilent Technologies Inc, 2003.
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3. Cao J, Schwichtenberg KA, Hanson NQ, Tsai MY. Incorporation and clearance of omega-3 fatty acids in erythrocyte membranes and plasma phospholipids. Clin Chem 2006;52:2265-2271.

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