Measurements and Conversions

MEASUREMENTS AND CONVERSIONS

Units of Volume*

20 drops = 1ml
30 drops = 1.5 ml
1 tsp = 5 ml
1 Tbsp = 15 ml = ½ oz
1 oz = 30 ml = 2 Tbsp

*Drops may vary depending on fluid viscosity, temperature, size of dropper opening or other factors.

Dosage Adjustment Calculation

Clarks' Rule is a reliable way to calculate a dosage for a child. This formula can also be used for a person who is significantly under or over the typical 150 lb. dosage model.

Clark's Rule: Child's weight in pounds/ 150 pounds = fraction of the adult dosage

MEASUREMENTS OF NUTRIENT POTENCY

Vitamin A

Retinol (1 mcg = 1 mcg RE*)	1 mg = 3333 IU 1 IU = 0.30 mcg 1 mcg = 3.333 IU 500 IU = 1.5 mg (1500 mcg) 3 mg = 10,000 IU
Retinyl acetate 1.147 mcg = 1mcg RE*	1 mg = 2907 IU 1 IU = 0.34 mcg 5000 IU = 1.7 mg (1700 mcg) 3.44 mg = 10,000 IU
Retinyl palmitate 1.832 mcg = 1 mcg RE*	1 mg = 1818 IU 1 IU = 0.55 mcg 5000 IU = 2.75 mg 5.50 mg = 10,000 IU
Beta Carotene 12 mcg = 1 mcg RAE*	1 mg = 1667 IU 1 IU = 0.6 mcg 5000 IU = 3.0 mg 6mg = 10,000 IU

*RE = retinol equivalent
*RAE = retinol activity equivalent

Vitamin C

Calcium ascorbate	1 mg = 0.8215 mg ascorbic acid
Sodium ascorbate	1 mg = 0.8839 mg ascorbic acid
Ascorbyl palmitate	1 mg = 0.4248 mg ascorbic acid

Vitamin D

Cholecalciferol (Vit D3) or Ergocalciferol (Vit D2)	1 mcg = 40 IU 1 IU = 0.025 mcg 1000 IU = 25 mcg 2000 IU = 50 mcg 5000 IU = 1.25 mg

Vitamin E

d-alpha tocopherol	1 mg = 1.49 IU 1 IU = 671 mcg
d-alpha tocopheryl acetate	1 mg = 1.36 IU 1 IU = 735 mcg
d-alpha tocopheryl succinate	1 mg = 1.21 IU 1 IU = 826.4 mcg
dl-alpha tocopherol (synthetic)	1 mg = 1.1 IU 1 IU = 909 mcg

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MEASUREMENTS OF ENZYME ACTIVITY

Plant Based Pancreatic Enzymes

The following chart provides a very rough estimate† of conversion between several Food Chemical Codex (FCC) measurement units, which is one of the most reliable measurements of plant based enzymes, and other recognized measurement units:

Enzyme	FCC units	USP units	NF units	SKB units
Amylase	1 DU unit	48 units **	48 units **	1 unit
Glucoamylase	1 AGU unit	N/A	N/A	not currently used
Lipase	1 LU unit	6.3 units **	6.3 units **	N/A
Maltase	1 DP unit	N/A	N/A	not currently used
Protease	1 HUT unit	0.61 PC unit	6.5 units **	N/A
Bromelain/Papain	1 PU unit is equivalent to 0.067 GDU, 0.1 MCU or 0.08 BTU***			
	1 MCU is the equivalent to .67 GDU			
Lactase	1 ALU unit is the equivalent of 1 LACU unit			
Invertase	1 FCC IAU is the equivalent of 500 SU			

N/A = no units exist for this enzyme

† Because of the subjective or non-standardized nature of some of the methods by which these assays are conducted there is no accurate method of conversion.
** Only to be used when measuring Pancreatic (animal) source enzymes.
*** Since there is no standardization of the test materials for GDU, MCU and BTU, these conversion ratios could vary from test to test and their accuraracy cannot be relied on. MCU methodology is very subjective.

Animal Based Pancreatic Enzymes

Pancreatin 1X provides the following minimal digestive activity:

Amylase: no less than 25 USP units/mg

Lipase: no less than 2 USP units/mg

Protease: no less than 25 USP units/mg

Higher levels of activity are expressed in multiples of these numbers. For example, 2x provides twice this activity and 4x provides four times this activity (Werbach).

Enzyme Activity Abbreviations

AGU	Amyloglucosidase Unit
ALU	Acid Lactase Unit
BTU	Bromelain Tyrosine Unit
DP	Diastatic Power
DU	Dextrinizing Unit
FCC Unit	Food Chemical Codex Unit
GDU	Gelatin Dissolving Unit (used to measure enzyme activity of bromelain)
HUT	Hemoglobin Unit on a Tyrosine basis
IAU	Invertase Activity Unit
LACU	Lactase Unit (aka LacU)
LU	Lipase Units
MCU	Milk Coagulating Unit (used to measure enzyme activity of bromelain)
NF Unit	National Formulary Unit (now equivalent to USP Units)
PC	Bacterial Protease Unit
PU	Papain Unit
SKB	Sandstedt, Keen and Blish Units (for amylase)
SU	Serrapeptase Unit or Sarrett Glucose Oxidase Unit
USP Unit	United States Pharmacopia Unit

MEASUREMENT OF ACUPUNCTURE NEEDLES

Enzyme Activity Abbreviations

Korean/ Japanese Gauges	Chinese Gauges	Thickness (mm)	Thickness (in)	Color
00	—	0.12	0.0047	Dark Green
0	—	0.14	0.0055	Lime Green
1	40	0.16	0.0063	Red
2	38	0.18	0.0071	Ivory
3	36	0.20	0.0079	Blue
—	34	0.22	0.0087	Pink
5	32	0.25	0.0098	Purple
8	30	0.30	0.0118	Brown
—	28	0.35	0.0137	—
—	26	0.40	0.0157	—

ABBREVIATIONS

Dietary Intake Abbreviations

AI Adequate Intake: used for 7 nutrients without RDAs – similar to an ESADDI and based on observed nutrient intakes of healthy persons

DRI Dietary Reference Intake: derived from the RDAs, AIs, ULs, and EARs

DV Daily Value: used for labeling supplements and foods, based on the DRIs

% DV Percent of Daily Value

EAR Estimated Average Requirement: the amount of a nutrient estimated to meet the requirement of half of all healthy individuals in a population

ESADDI Estimated Safe and Adequate Daily Dietary Intake: used for 7 nutrients that do not have RDAs based on observed nutrient intakes of healthy persons

MDR Minimum Daily Requirement (may be obsolete)

RDA Recommended Daily Allowance: the average daily dietary intake of nutrients to meet requirements of 98% of healthy persons

UL Tolerable Upper Intake Level: the highest daily intake that is likely to pose no risk of toxicity for almost all persons

Dosage Abbreviations

q.d. once daily

b.i.d. twice daily

t.i.d. three times daily

q.i.d.f four times daily

SOURCES:

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