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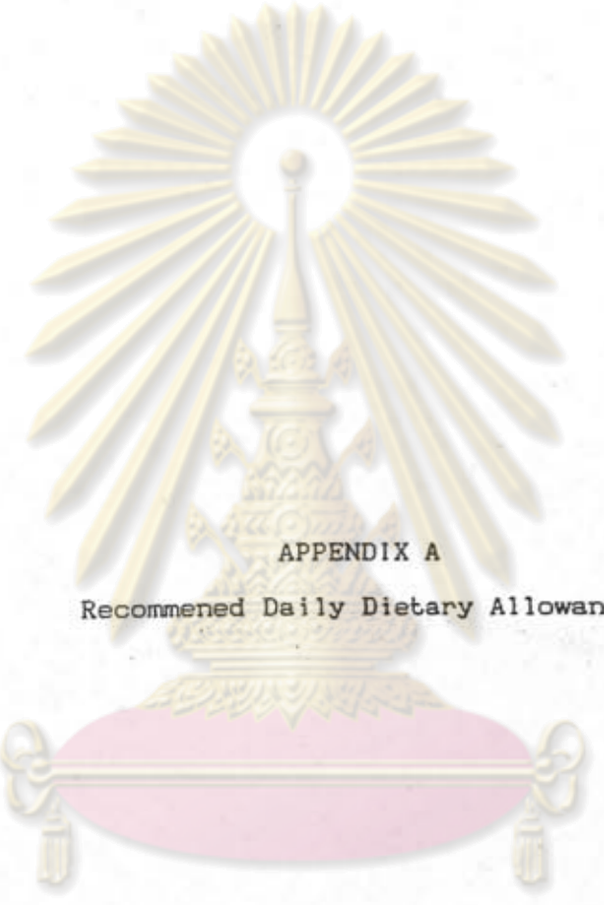
APPENDICES



APPENDIX A

Recommened Daily Dietary Allowance

FOOD AND NUTRITION BOARD, NATIONAL ACADEMY OF SCIENCES–NATIONAL RESEARCH COUNCIL

RECOMMENDED DAILY DIETARY ALLOWANCES,[a] Revised 1980

Designed for the maintenance of good nutrition of practically all healthy people in the U.S.A.

	Age (years)	Weight (kg)	Weight (lb)	Height (cm)	Height (in)	Protein (g)	Fat-Soluble Vitamins: Vitamin A (μg RE)[b]	Vitamin D (μg)[c]	Vitamin E (mg α-TE)[d]	Water-Soluble Vitamins: Vitamin C (mg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg NE)[e]	Vitamin B-6 (mg)	Folacin[f] (μg)	Vitamin B-12 (μg)	Minerals: Calcium (mg)	Phosphorus (mg)	Magnesium (mg)	Iron (mg)	Zinc (mg)	Iodine (μg)
Infants	0.0–0.5	6	13	60	24	kg × 2.2	420	10	3	35	0.3	0.4	6	0.3	30	0.5[g]	360	240	50	10	3	40
	0.5–1.0	9	20	71	28	kg × 2.0	400	10	4	35	0.5	0.6	8	0.6	45	1.5	540	360	70	15	5	50
Children	1–3	13	29	90	35	25	400	10	5	45	0.7	0.8	9	0.9	100	2.0	800	800	150	15	10	70
	4–6	20	44	112	44	30	500	10	6	45	0.9	1.0	11	1.3	200	2.5	800	800	200	10	10	90
	7–10	28	62	132	52	34	700	10	7	45	1.2	1.4	16	1.6	300	3.0	800	800	250	10	10	120
Males	11–14	45	99	157	62	45	1000	10	8	50	1.4	1.6	18	1.8	400	3.0	1200	1200	350	18	15	150
	15–18	66	145	176	69	56	1000	10	10	60	1.4	1.7	18	2.0	400	3.0	1200	1200	400	18	15	150
	19–22	70	154	177	70	56	1000	7.5	10	60	1.5	1.7	19	2.2	400	3.0	800	800	350	10	15	150
	23–50	70	154	178	70	56	1000	5	10	60	1.4	1.6	18	2.2	400	3.0	800	800	350	10	15	150
	51+	70	154	178	70	56	1000	5	10	60	1.2	1.4	16	2.2	400	3.0	800	800	350	10	15	150
Females	11–14	46	101	157	62	46	800	10	8	50	1.1	1.3	15	1.8	400	3.0	1200	1200	300	18	15	150
	15–18	55	120	163	64	46	800	10	8	60	1.1	1.3	14	2.0	400	3.0	1200	1200	300	18	15	150
	19–22	55	120	163	64	44	800	7.5	8	60	1.1	1.3	14	2.0	400	3.0	800	800	300	18	15	150
	23–50	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	18	15	150
	51+	55	120	163	64	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	10	15	150
Pregnant						+30	+200	+5	+2	+20	+0.4	+0.3	+2	+0.6	+400	+1.0	+400	+400	+150	h	+5	+25
Lactating						+20	+400	+5	+3	+40	+0.5	+0.5	+5	+0.5	+100	+1.0	+400	+400	+150	h	+10	+50

[a] The allowances are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined. See text for detailed discussion of allowances and of nutrients not tabulated. See Table 1 (p. 20) for weights and heights by individual year of age. See Table 3 (p. 23) for suggested average energy intakes.

[b] Retinol equivalents. 1 retinol equivalent = 1 μg retinol or 6 μg β carotene. See text for calculation of vitamin A activity of diets as retinol equivalents.

[c] As cholecalciferol. 10 μg cholecalciferol = 400 IU of vitamin D.

[d] α-tocopherol equivalents. 1 mg *d*-α tocopherol = 1 α-TE. See text for variation in allowances and calculation of vitamin E activity of the diet as α-tocopherol equivalents.

[e] 1 NE (niacin equivalent) is equal to 1 mg of niacin or 60 mg of dietary tryptophan.

[f] The folacin allowances refer to dietary sources as determined by *Lactobacillus casei* assay after treatment with enzymes (conjugases) to make polyglutamyl forms of the vitamin available to the test organism.

[g] The recommended dietary allowance for vitamin B-12 in infants is based on average concentration of the vitamin in human milk. The allowances after weaning are based on energy intake (as recommended by the American Academy of Pediatrics) and consideration of other factors, such as intestinal absorption; see text.

[h] The increased requirement during pregnancy cannot be met by the iron content of habitual American diets nor by the existing iron stores of many women; therefore the use of 30–60 mg of supplemental iron is recommended. Iron needs during lactation are not substantially different from those of nonpregnant women, but continued supplementation of the mother for 2–3 months after parturition is advisable in order to replenish stores depleted by pregnancy.

APPENDIX B

Protein Evaluation Basal Diet

Preparation of Protein Evaluation Basal Diet [43]

Sample	X^*
Cottonseed oil	$8 - \frac{X \times \%\ \text{ether extract}}{100}$
Salt mixture USP	$5 - \frac{X \times \%\ \text{ash}}{100}$
Vitamin mixture	1
Cellulose	$1 - \frac{X \times \%\ \text{crude fiber}}{100}$
Water	$5 - \frac{X \times \%\ \text{moisture}}{100}$

Sucrose or corn starch , to make 100

$$X^* = \frac{1.60 \times 100}{\%\ \text{N of sample}}$$

Salt Mixture USP - [43] Both USP salt mixture and salt mixture having essentially same proportions of the elements Prepooration USP xix salt mixture as follows : Grind in mortar portion of 193.3 g NaCl with 0.79 g KI. Similarly grind together remainder of the NaCl with 389.0 g KH_2PO_4 , 57.3 g $MgSO_4$ anhydrous., 381.4 g $CaCO_3$, 27.0 g $FeSO_4.7H_2O$, 4.01 g $MnSO_4.H_2O$, 0.548 g $ZnSO_4.7H_2O$, 0.477 g $CuSO_4.5\ H_2O$, and 0.023 g $CoCl_2.6H_2O$, finally adding the NaCl - KI mixture. Reduce entire mixture to fine powder.

Vitamin Mixture [43]

	mg/100 g ration
Vitamin A (dry, stabilized)	2000 (IU)
Vitamin D (dry, stabilized)	200 (IU)
Vitamin E (dry, stabilized)	10 (IU)
Menadione	0.5
Choline	200
p - Aminobenzoic acid	10
Inositol	10
Niacin	4
Calcium D-pantothenate	4
Riboflavin	0.8
Thiamine HCl	0.5
Pyridoxine HCl	0.5
Folic acid	0.2
Biotin	0.04
Vitamin B_{12}	0.003
Glucose , to make	1000

APPENDIX C

Chromatogram of Chemical Analysis

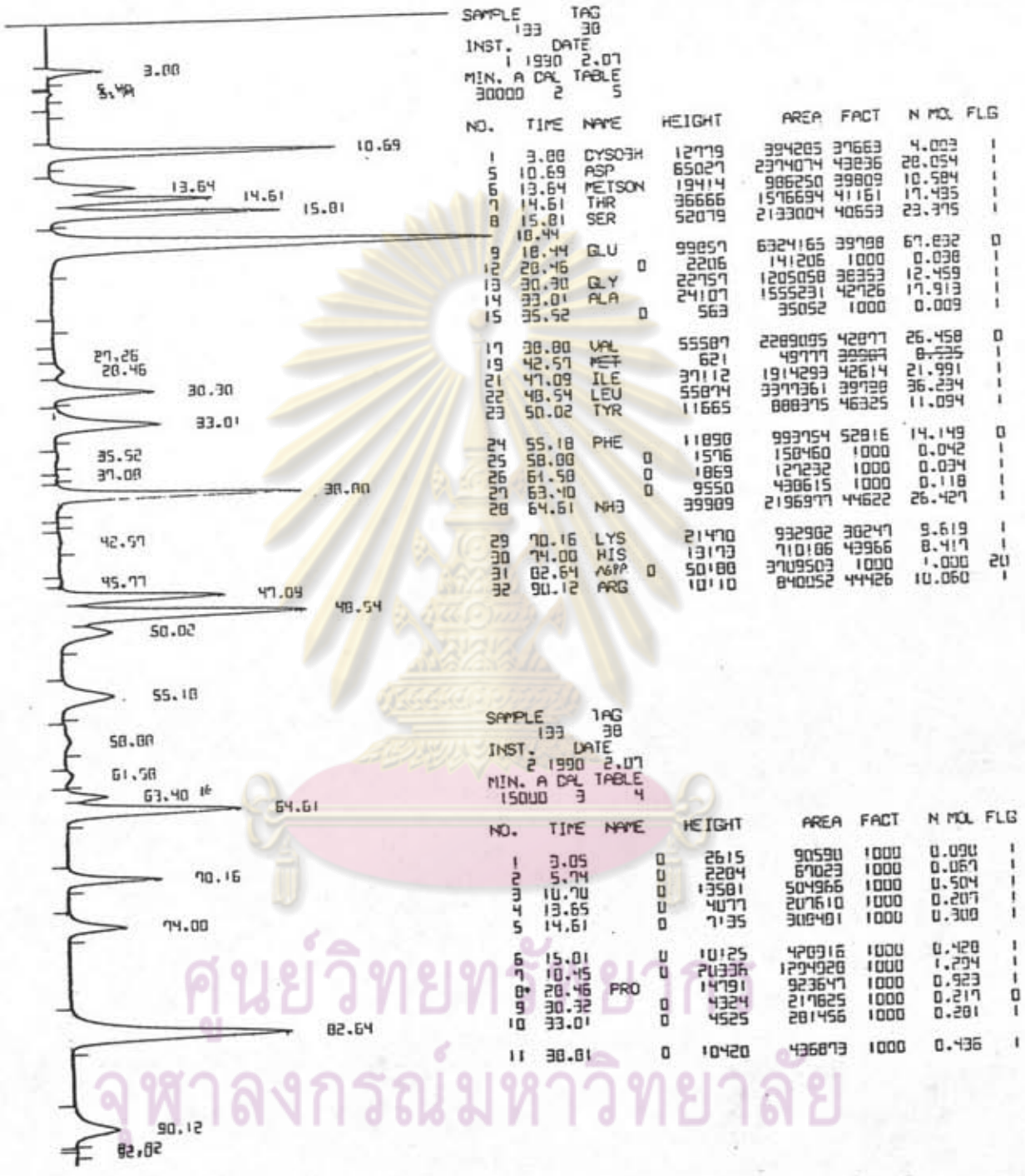


Figure 6 Chromatogram of amino acid contents in spray-dried low lactose milk-based medical food

APPENDIX D

Statistical Analysis

Statistics

1. Mean (x)

$$X = \frac{\Sigma X}{N}$$

2. Standard Deviation (S.D.)

$$S.D. = \sqrt{\frac{\Sigma(X-\bar{X})}{N-1}}$$

3 Analysis of Variance (ANOVA)

Source of Variation	d.f.	SS	MS	VR
Among groups (Treatment)	$k - 1$	SS_{among}	$MS_{among} = SS_{among}/(k-1)$	$VR = MS_{among}/MS_{within}$
Within groups (Error)	$N - k$	SS_{within}	$MS_{within} = SS_{within}/(N-k)$	
Total	$N - 1$	SS_{total}		

d.f. = degree of freedom

SS = Sum of Squares

$$SS_{among} = \sum_{j=1}^{k} n_j(X_{.j} - X_{..})^2$$

$$SS_{within} = \sum_{j=1}^{k} \sum_{i=1}^{k} (X_{ij} - X_{.j})^2$$

$$SS_{total} = \sum_{j=1}^{k} \sum_{i=1}^{k} (X_{ij} - X_{..})^2$$

MS = Mean Square

VR = Variance Ratio

whereas X_{ij} = Observered Value at Treatment j

i = 1 , 2,.....,n

j = 1 , 2,.....,k

$$T.j = \sum_{i=1}^{n_j} X_{ij} \qquad \bar{X}.j = \frac{T.j}{n_j}$$

$$T.. = \sum_{j=1}^{k} T.j \qquad \bar{X}.. = \frac{T..}{N}$$

$$N = \sum_{j=1}^{k} n_j$$

Comparing the VR value with the critical value F obtained from table at degree of freedom (k - 1) and (N - k) :

- If $VR > F_{(table)}$, we reject the null hypothesis that $u_1 = u_2 = u_3 = u_4 \ldots = u_k$ and accept the alternative hypothesis.
- If $VR < F_{(table)}$, the null hypothesis stands.

4. Honestly Significant Difference Test (HSD Test)

$$HSD = q_{\alpha,k,N-k}\sqrt{\frac{MSE}{n}}$$

whereas α = significant level

k = number of treatments

n = sample sizes of each treatment

MSE = mean square of error from ANOVA table

Value q obtained from table at degree of freedom k and (N-k) and HSD obtained from calculation.

If the difference between treatment means (absolute value) of each pair of treatments is more than HSD value, therefore, this test finds this pair of treatments to be significantly different.

5. Paired Comparisons

$$t = \frac{d - \mu_d}{s_d}$$

$$s_d = s_d / \sqrt{n}$$

$$d = d_1 / n$$

Table 10 Analysis of Variance for Protein Efficiency Ratio

SOURCE OF VARIATION	DF	SS	MS	VR
AMONG GROUPS	2	.6498871	.3239435	1.744871
WITHIN GROUPS	27	5.028152	.1862279	
TOTAL	29	5.67804		

$F_{.95\ (2,27)} = 3.35$; p - value > 0.05 , not significant

Table 11 Analysis of Variance for Net Protein Ratio

SOURCE OF VARIATION	DF	SS	MS	VR
AMONG GROUPS	2	1.929016	.9645081	1.823007
WITHIN GROUPS	27	14.28503	.5290753	
TOTAL	29	16.21405		

$F_{.95(2,27)} = 3.35$; p-value > 0.05, not significant

Table 12 Paired Comparisons between low lactose group and Lactose group

Paired Comparisons	d.f	t - distribution	
CPER	9	1.0306	NS
RNPR	9	1.5550	NS
TD	9	0.9127	NS
BV	9	1.8074	NS
NPU	9	0.0746	NS

$t_{.95(9)}$ = 1.8331

NS = not significant

VITA

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