

UNIVERSITI SAINS MALAYSIA

Peperiksaan Semester Kedua
Sidang Akademik 1990/91

Mac/April 1991

IMK 207/2 - Pemakanan Manusia

Masa: [2 jam]

Sila pastikan bahawa kertas peperiksaan ini mengandungi **TUJUH** muka surat yang bercetak sebelum anda memulakan peperiksaan ini. (Termasuk Lampiran).

Jawab **EMPAT** soalan. Semua soalan mesti dijawab di dalam Bahasa Malaysia.

Semua soalan mengandungi nilai yang sama.

1. (a) Kenalpastikan ciri-ciri struktural mukosa usus serta enzim-enzim yang memainkan peranan penting di dalam proses pencernaan dan penyerapan.

[15 markah]

- (b) Nyatakan bahan-bahan yang diserap melalui usus kecil yang merupakan hasil pencernaan molekul karbohidrat, protein dan lemak.

[5 markah]

- (c) Senaraikan lima (5) fungsi air liur.

[5 markah]

2. (a) Terangkan bagaimana badan boleh memperolehi glukosa apabila jumlah karbohidrat yang dimakan tidak mencukupi.

[8 markah]

- (b) Huraikan lintasan metabolisme asid lemak perlu (EEA) sehubungan dengan sintesis prostaglandin.

[6 markah]

- (c) Nyatakan sumber makanan berprotein yang paling baik serta bandingkan mutu protein daripada sumber haiwan dan tumbuh-tumbuhan.

[5 markah]

- (d) Terangkan maksud antivitamin serta bagaimana aktiviti vitamin boleh dimusnahkan atau dihalang.

[6 markah]

3. Untuk menjawab soalan ini, sila rujuk kepada lampiran 1 dan 2.

Nilaikan kandungan serta kesesuaian risalah yang dilampirkan kepada masyarakat tempatan berdasarkan

- (i) maklumat pemakanan
- (ii) RDA ('Recomended Dietary Allowance')
- (iii) zat makanan yang dibekalkan

Setelah membuat penilaian yang terperinci, apakah pendapat anda tentang justifikasi pengambilannya sebagai suatu sumber makanan tambahan?

[25 markah]

4. (a) Huraikan secara terperinci (serta berikan beberapa contoh yang lengkap) tentang :

- (a) Jadual Komposisi Makanan
- (b) RDA

[15 markah]

(b) Terangkan dengan ringkas perkara-perkar berikut :

- (i) Makanan yang telah diperkayakan
- (ii) Makanan organik
- (iii) Makanan semulajadi

[10 markah]

5. Bincangkan tentang sumber-sumber berikut yang mungkin boleh bertindak sebagai toksikan makanan:

- (i) tumbuh-tumbuhan
- (ii) makanan dari sumber haiwan
- (iii) mikro-organisma, dan
- (iv) aditif makanan

[25 markah]

6. (a) Berdasarkan pengetahuan anda, terangkan kaedah penilaian pemakanan yang boleh disyorkan untuk mengesan atau mendiagnosa status kegagalan pemakanan yang tidak serius.

[7 markah]

- (b) Huraikan faktor-faktor yang memainkan peranan di dalam perkembangan obesiti serta terangkan beberapa kaedah yang boleh digunakan untuk mengawal berat badan.

[8 markah]

- (c) Huraikan dan bincangkan tentang faktor-faktor yang boleh mempengaruhi keperluan zat makanan seseorang individu.

[10 markah]

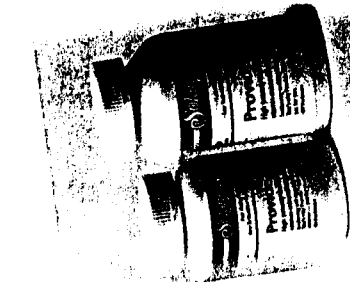
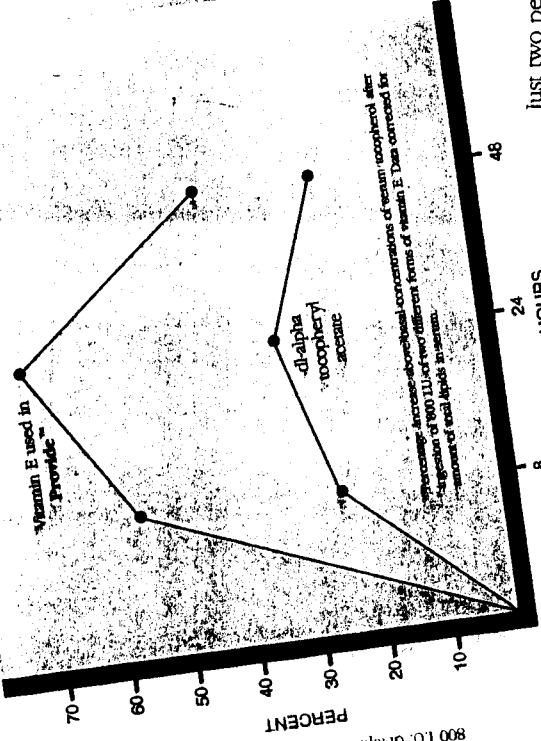
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Provide™ is specially designed for individuals who want high potency supplements but cannot swallow or properly digest large tablets. Provide perlecaps are fairly large, but most people find them easy to swallow because of their shape and they're soft and slippery. Provide is also a highly advanced product and superior to others in many ways:

1) The vitamin A is derived from a combination of fish liver oil because it is fast acting and easily absorbed, and beta carotene because it is slowly converted to vitamin A in the body and helps provide protection from free radical damage to cells and tissues which can be caused by consumption of fatty foods and exposure to things like car exhaust, cigarette smoke, radiation and chemicals.

2) The vitamin E used in Provide is the only form of vitamin E that can be used by the body. The commonly used esterified forms of vitamin E such as d-alpha tocopheryl acetate must be biologically converted by the body to d-alpha tocopherol before the body can use it. Some people cannot make or can only partially make this conversion in their bodies. Tests have also shown the vitamin E used in Provide is over three times as potent as synthetic d-alpha tocopheryl acetate in its ability to increase blood concentrations on a per mg. basis. (See *Diagram*.) All of this means that Solaray Provide is more bioavailable for more people.

3) Perhaps the most important aspect of Provide that separates it from the competition



just two perlecaps of this remarkable product contain:

- 10,000 IU Pro-Vitamin A (from carotene)
- 10,000 IU Vitamin A (fish liver oil)
- 400 IU Vitamin D (fish liver oil)
- 300 IU Vitamin E (100% natural d-alpha tocopherol)
- 300 mg Vitamin C (ascorbic acid w/rose hips)
- 50 mg Vitamin B 1 (thiamine mononitrate)
- 50 mg Vitamin B 2 (riboflavin)
- 50 mg Niacinamide
- 50 mg Vitamin B 6 (pyridoxine hydrochloride)
- 50 mg Pantothenic Acid (d-calcium pantothenate)
- 50 mcg Vitamin B 12 (cyanocobalamin)
- 400 mcg Folic Acid
- 50 mcg Biotin
- 50 mg Para-aminobenzoic Acid
- 50 mg Choline (choline bitartrate, lecithin)
- 50 mg Inositol
- 200 mg Calcium (egg shell & bone meal)
- 50 mg Zinc (zinc citrate)
- 15 mg Iron (ferrous fumarate)
- 18 mg Manganese (manganese carbonate)
- 30 mg Potassium (potassium citrate)
- 30 mg Copper (copper gluconate)
- 2 mg Iodine (kelp)
- 150 mcg Phosphorus (egg shell & bone meal)
- 50 mcg Selenium (selenium yeast)
- 50 mcg Chromium (100% GTF chromium yeast)
- 50 mcg Polysaturated vegetable seed oil
- 560 mg Olive Oil (100% pure and unsaturated natural mix of high quality fatty acids: Omega 9, 6 and 3)
- 200 mg Lecithin

is that while other soft gelatin capsule products use common soy oil and hydrogenated vegetable oil as the carrier for their nutrients, Solaray, Inc. uses a full 560 mg. of a very special polyunsaturated vegetable seed oil. It is special because it contains a unique three to one ratio of Omega-3 fatty acids to Omega-6 fatty acids. These fatty acids are precursors to and necessary for the formation of EPA in the body as well as both of the important PG-3 and PG-1 prostaglandin hormones. In addition to playing an essential role in hormone regulation, they are also vital to the body in regulating cholesterol metabolism, inflammatory response, and absorption of fat soluble nutrients.

Chart 15.13 Recommended daily dietary allowances for various age groups in the United States

	Infants		Children		Adolescents		Adults		Adults	
	0-6 mos	4-6 yrs	Males	Females	15-18 yrs	Females	20-50 yrs	Females	51 yrs over	Females
Weight, kg(lb)	6(13)	20(44)	66(145)	55(120)	70(154)	55(120)	70(154)	55(120)	70(154)	55(120)
Height, cm(in)	60(24)	112(44)	176(69)	163(64)	178(70)	163(64)	178(70)	163(64)	178(70)	163(64)
Protein, g	kg X 2.2	30	56	46	56	44	56	44	56	44
Fat-soluble vitamins+	420	500	1000	800	1000	800	1000	800	1000	800
Vitamins A, µg	10	10	10	10	5	5	5	5	5	5
Vitamin D, µg	10	10	10	10	10	8	10	8	10	8
Vitamin E activity, mg	3	6	10	8	10	8	10	8	10	8
Water-soluble vitamins										
Ascorbic acid, mg	35	45	60	60	60	60	60	60	60	60
Folic acid, µg	30	200	400	400	400	400	400	400	400	400
Niacin, mg	6	11	18	14	18	13	16	13	16	13
Riboflavin, mg	0.4	1.0	1.7	1.3	1.6	1.2	1.4	1.2	1.4	1.2
Thiamine, mg	0.3	0.9	1.4	1.1	1.4	1.0	1.2	1.0	1.2	1.0
Vitamin B ₆ , mg	0.3	1.3	2.0	2.0	2.2	2.0	2.2	2.0	2.2	2.0
Vitamin B ₁₂ , µg	0.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minerals										
Calcium, mg	360	800	1200	1200	800	800	800	800	800	800
Phosphorus, mg	240	800	1200	1200	800	800	800	800	800	800
Iodine, µg	40	90	150	150	150	150	150	150	150	150
Iron, mg	10	10	18	18	10	18	10	18	10	18
Magnesium, mg	50	200	400	300	350	300	350	300	350	300
Zinc, mg	3	10	15	15	15	15	15	15	15	15

Source : Food and Nutrition Board, Recommended Dietary Allowances, 9th ed., National Academy of Sciences - National Research Council, Washington, D.C., 1980.

+Microgram