Singapore Dietitians' Association

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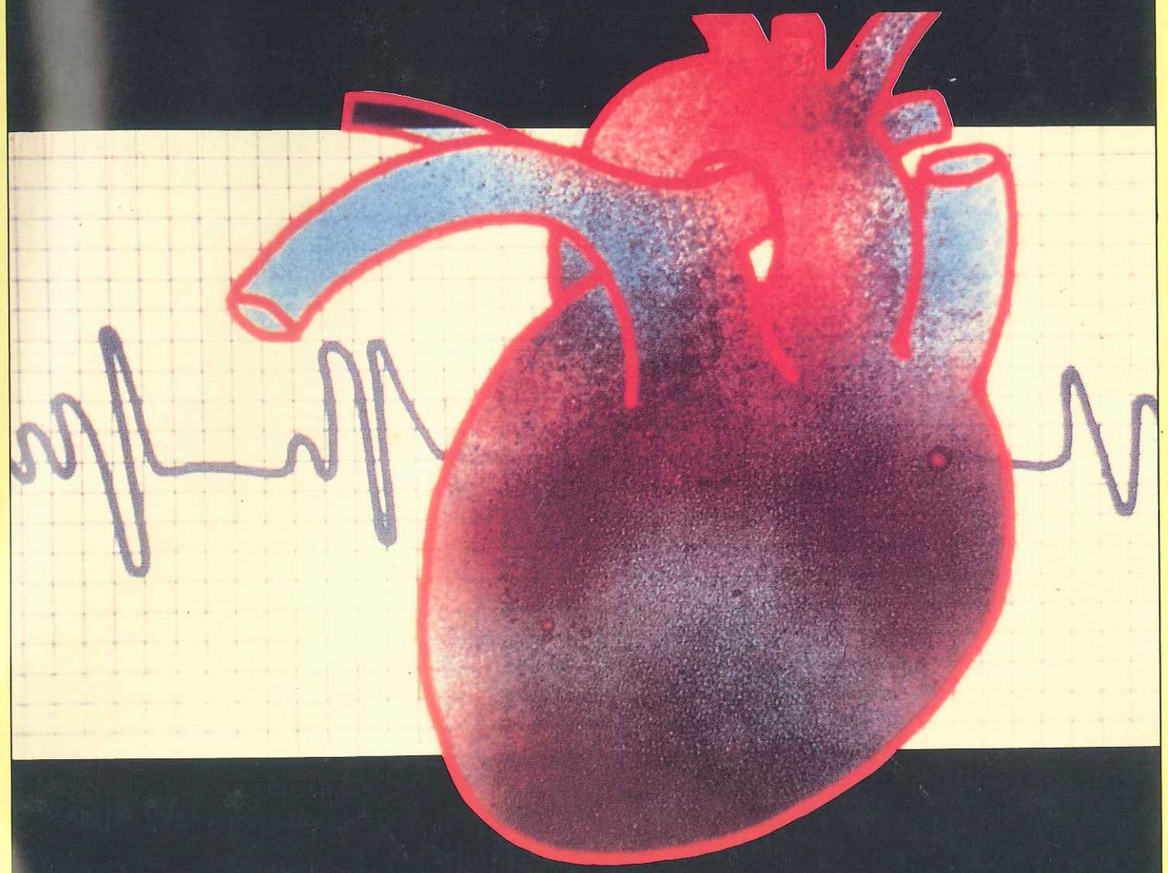
Dietary Management of Hyperlipidaemia



Potassium Update
Health Foods – Are They Really Healthier?

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The Singapore Dietitian

VOL. 4 No. 1 March 1989

Editorial...

In this issue we focus on two topics of great concern to the health conscious public in Singapore. Firstly, prevention of heart disease. The recent National Heart Week, held last December, had the theme "Cholesterol and Your Heart". Through public symposia, health screening and distribution of literature, the Singapore National Heart Association (SNHA) drove home the message that high blood cholesterol is a major risk factor of coronary heart disease, and that treating high cholesterol once you have it is best done through diet. **"The treatment of high blood cholesterol should always begin with non-drug approaches which will include dietary therapy, weight control, exercise and modification of lifestyle"**, *said SHNA in a Heart Week publication. We are pleased in this issue to publish a paper given by our President, Ms Susani Karta, at a Medical Symposium held for Heart Week. Incidentally, the turn-out at every public event during Heart Week far exceeded expectations — a clear indication of the public's hunger for knowledge on diet and health.*

Of late we have witnessed the mushrooming of health food shops across the island — more evidence of people's eagerness to stay healthy through diet. So it is timely that in this issue we deal with the subject of use and abuse of health foods and vitamin/mineral supplments in an article and book review.

With the current heightened interest in diet it is relieving to learn that SDA is taking steps to counter the barrage of nutritional misinformation which bombards the public. One step has been increasing involvement in public education programmes, such as Heart Week and the SDA's own "Cholesterol Education Programme" due to begin this month. Another way in which SDA proposes to safeguard the public's welfare is revealed overleaf.

By the way, don't miss your chance to hear about, and comment on, the important issues facing our profession, at the 5th AGM coming up on 29th April. See you there!

CONTENTS

From the President ...

Registration: Credential for Dietetics/Nutrition Practitioners

The biggest threat to the dietetics and nutrition profession, and to the public as well, is quackery that flourishes with the growth in nutrition and health industries. The health and nutrition charlatans seek their fortunes from the segment of society that is very interested in achieving and maintaining good health. They dangle hope and promise. For example, the sales agents of health food products like to make wonderful claims in promoting their products. Some slimming centres, agents of slimming products and health food stores have aggressively advertised and identified their sales personnel or diet counsellors as "trained" nutritionists after merely giving them a few hours of nutrition classes.

The problem is manifest in what appears to be growing public acceptance of unqualified "nutritionists", whose opinion and advice are often sought and bought in lieu of the expertise of dietitians.

In addition, some of our members have revealed their concern about overlapping or competitive activities of other health professional groups in areas considered to be the domain of dietetics. Some view this as the profession's most important problem. Examples include the tendency for nurses and others to assume or to be given responsibilities of dietitians in diet counselling and the activities of pharmacists and others in offering nutritional advice in areas such as total parenteral nutrition and nutritional supplementation. Although other professionals may have some basic nutritional knowledge, no other professional group has the depth of knowledge of food and nutrition and its relation to health and disease which the dietetic prefession has. Because of their special education and training, dietitians are the dietetics and nutrition experts competent to be effective translators of food, nutrition and health concepts to patients and the public in general.

So how does our profession gain the confidence of the public it serves and keep the public from swallowing the half-truths of unsubstantiated nutrition claims?

As an organization we need to take steps to try to alert the public to the dangers of nutrition quackery, and to expose unqualified diet and nutrition counsellors who are threatening the well-being of the public with information that is sketchy and biased and does not have its roots in scientific research.

In view of this the Singapore Dietitians' Association (SDA) has formed a Registration Committee to undertake the task of formulating a professional registration system for the profession of dietetics and nutrition in Singapore. Part of the motivation in establishing the registration is the hope that it will protect the status and function of qualified dietitians and protect the health, safety and welfare of the public by encouraging high standards of dietetic practitioner performance.

Moreover, it is desirable to have a means of differentiating fully-qualified professional dietitians from those on a different level or those in the process of becoming qualified.

Eligibility for registration will require acceptance into SDA as a full member. This in turn depends on the candidate's academic preparation and experience in dietetic and nutrition practice. Requirement of continuing education for maintenance of registration is also commendable as it will ensure that dietitians engage regularly in the acquisition of up-to-date knowledge and skills. Those who will be entitled for registration may use the designation "Singapore Registered Dietitian" or "SRD" after their names.

As a professional association, SDA plans to promote and market the professional services of Singapore Registered Dietitians (SRDs) as the best qualified purveyors of nutrition information in health promotion and disease prevention. The dietetics profession and its association must be ready to take proactive steps to control and guide the future of the profession and to promote optimal health and nutritional status of the population.

Susani K Karta
President
Singapore Dietitians' Association

Potassium Update

Nehal Kamdar, B.Sc., Dip. Diet. Appl. Nutr.

Sodium — the mineral of the sea and the shaker — is a familiar one to all of us. However, its metabolic co-worker, potassium, had long been relatively anonymous.

All that changed a decade ago when there was a meteoric rise and crashing fall of the liquid protein diet. Dozens of its users — mostly young and female — had succumbed to fatal heart ailments. Soon the US Food and Drug Administration noted that many of the victims had too little potassium in their blood. Although experts ultimately concluded that a general state of malnutrition, not the low potassium alone, was the likely cause of the deaths, potassium had been etched permanently in the minds of the nutrition conscious.

This article is an update on current knowledge about potassium, with emphasis on the dangers of both its deficiency and toxicity.

Potassium constitutes 5% of the total mineral content of the body. It is the major cation of the intracellular fluid and there is also a small amount in the intercellular fluid. Potassium is present in an intracellular concentration of approximately 150mmol/l. In comparison, serum potassium concentration ranges from 3.5 to 5.0mmol/l. Potassium has four main functions:

1. Along with sodium, potassium is involved in the maintenance of normal water balance, osmotic equilibrium and acid-base balance.
2. It is important, along with calcium, in the regulation of neuromuscular activity.
3. It promotes cellular growth.
4. It assists in the body processes that synthesise and store carbohydrates.

Absorption and excretion of potassium

Normal potassium intake usually varies from 50-100mmol/day. Potassium is readily absorbed from the small intestine. Eighty to ninety per cent of potassium ingested is excreted in the urine. A small amount is lost in the faeces. Potassium levels in the muscle are related to the muscle mass, therefore if muscle mass is being formed, as adequate supply of potassium is essential.

Potassium homeostasis

To maintain potassium homeostasis, the amount of potassium ingested must equal the amount excreted. The kidney maintains normal serum levels through its ability to filter, reabsorb and excrete potassium. The adrenal cortex hormone, aldosterone, influences potassium excretion. It conserves both sodium and ionised sodium, and ionised potassium is excreted in place of ionised sodium by means of the exchange mechanism in the renal tubules. The current belief is that the filtered potassium is totally reabsorbed in the proximal tubules and that the potassium which appears in the urine is a product of distal tubular potassium secretion.

Factors influencing potassium secretion from distal tubules

a. The delivery of sodium ions to the distal tubule, where an increased delivery of fluid and sodium stimulates potassium secretion.
b. The electrical gradient that exists between the distal tubular lumen and the secretory distal tubular cells where a more negative gradient favours a greater passive diffusion of potassium ions into the distal tubular lumen.
c. The level of circulating aldosterone — higher levels increase potassium secretion.
d. The concentration of potassium in the distal tubular cells — an increased potassium concentration stimulates increased potassium secretion.
e. The acid-base balance of the body — with alkalosis hydrogen ions leave the body cells and potassium ions enter the cells, whereas in acidosis the potassium ions leave the cells and the plasma concentration increases.

Recommended intake of potassium

In 1980 the US Committeee on Dietary Allowances decided to give the public some guidelines on desirable potassium intakes . Safe and adequate ranges were estimated at 1875-5625mg (48-144mmol) daily for adults. Table 1 shows the recommended potassium allowance for different age groups.

Table 1: Recommended daily dietary allowances for Potassium

Group/age	Potassium (mg)
Infants 0-6 mth.	350-925
Infants 7-12 mth.	425-1275
Children 1-3 yr.	550-1650
Children 4-6 yr.	775-2325
Children 7-10 yr.	1000-3000
Adolescents 11-18 yr.	1525-4575
Adults 19+ yr.	1875-5625

Source: US *Recommended Daily Dietary Allowances, revised* 1980. *Food and Nutrition Board, National Academy of Sciences, Washington,* 1980.

Potassium deficiency

Excessive loss of intracellular fluid may result in potassium deficiency. The loss may be due to vomiting, diarrhoea, excessive diuresis or prolonged malnutrition. These are conditions during which potassium from intracellular fluid is transferred to extracellular fluid, the serum potassium level is low and ionised potassium secretion is increased.

The symptoms of potassium deficiency are weakness, fatigue, abnormal heartbeat and irregularities in the electrocardiogram. If severe, the deficiency may be associated with muscle abnormalities such as twitching, muscle wasting and hyperventilation. Kidney impairment may also occur. Any condition giving rise to acidosis is likely to cause potassium loss. Intravenous feedings may lack sufficient potassium. Also, certain diuretics and adrenal cortical hormones may cause potassium depletion if efforts are not made to replace the potassium in the diet.

Dietary supplementation

Patients receiving long-term diuretic therapy and patients who have a low serum potassium level are often encouraged to increase their intake of potassium-rich foods (see Table 2). These patients may require 40-100mmol of potassium daily in addition to that normally contained in the diet. Most patients can find a food which they like and which can fit into their food budget. A possible disadvantage of high potassium diets, however, is the ratio of potassium to calories which is rarely lower than one mmol of potassium per 10 calories. For example, a medium sized banana may contain 12.7 mmol of potassium and 130 calories, and 240ml of orange juice 12.7mmol of potassium and 110 calories.

The use of salt substitutes as a source of potassium was suggested by Sopko and Freeman several years ago. The common brands available have potassium content of 50-60mmol per teaspoon (see Table 3). Salt substitutes should not be used in certain conditions (see section on potassium toxicity). As they are a potential hazard to infants and children (3) they must be kept safely out of their reach.

Table 2: Potassium content of selected foods

Foods and beverages	Amount	Potassium (mmol)
Apricot juice, nectar	240 ml	9.5
Grapefruit juice, canned	240 ml	9.2
Milk, whole 3.5% fat	240 ml	9.0
Milk, nonfat	240 ml	10.4
Orange juice, fresh	240 ml	12.7
Prune juice (high in sodium)	240 ml	14.4
Tomato juice (high in sodium)	240 ml	14.0
Banana, fresh	1 medium	14.0
Figs, dried	5 medium	16.4
Peaches, dried, uncooked	1 cup	39.0
Raisins, dried, seeded	1 cup	31.0
Carrots, raw	2 small	8.7
Potato, baked, without skin	2½" diameter	12.9

Source: Pennington J.A.T., and Church H.N. Food values of portions commonly used. 13th edn, Philadelphia: J.B. Lippincott, 1980.

Table 3: Potassium content of selected salt substitutes

Salt substitutes	Amount	Potassium (mmol)
Adolph's	1 packet	11.0
Co-salt	5 grams	57.5
Diasal	5 grams	56.5
Lite-salt (high in sodium)	5 grams	33.0
Neocurtasal	5 grams	60.5
Nu-salt	5 grams	10.4
Salf-free	5 grams	70.5

Source: Pearson R.E. and Fish K.H., Potassium content of selected medicines, foods and salt substitutes. Hosp. Pharm. 6: 6-9, 1971.

Potassium toxicity

Initially, high blood potassium generally produces few, if any, symptoms. Loss of muscle tone and diminished tendon reflexes sometimes signal development of the problem. Unfortunately in other cases, no symptoms occur, until toxic effects on the heart become evident and can be seen in the electrocardiogram. Symptoms of hyperkalaemia are mental confusion, numbness of the extremities, poor respiration and weakness of heart action.

Most people regulate potassium with extraordinary accuracy, excreting any unnecessary or potentially harmful amounts. However, certain conditions and drugs can affect the body's ability to keep potassium in balance. These include:

a. Addison's disease, untreated stage
b. Certain electrocardiogram abnormalities and heart conditions
c. Dehydration
d. Heat cramps
e. High blood potassium from any cause
f. Impaired kidney function
g. Use of potassium-sparing diuretics or digitalis heart drugs.

In these instances high potassium intake could result in hyperkalaemia. Therefore, while healthy adults almost never develop high blood potassium simply from taking large amounts of potassium orally, the use of potassium supplements or salt substitutes must not be recommended without first determining the medical and drug history of the individual.

Thanks are due to Fong Mei Lin, who contributed resource materials for this article.

References

1. Colvin *et al*: Drug Consult — Diuretic-Induced Hypokalaemia — Management. Drugdex, 1988

2. Hausman, P.: The Right Dose — How to take Vitamins and Minerals Safely. Chapter 16, 303-356. The Rodale Press — Maemnaus: Pennsylvania, 1987.

3. Kallem *et al*: Near fatal hyperkalaemia due to ingestion of salt substitute by an infant. J. Amer. Diet. Assoc. 235 (19): 2125-2126, 1976.

4. Kraus M.V. and Mahan L.K.: Food Nutrition and Diet Therapy, 6th edn. Chapters 7 and 8 (155-186). Livirara Roca: Sao Paulo, Brazil, 1979.

5. Sopko J.A. and Freeman R.M.: Salt substitutes as a source of potassium. J. Amer. Med. Assoc. 238 (7): 608-610, 1977.

6. Yap V., Patel A. and Thomsen J.: Hyperkalaemia with cardiac arrythmia. J. Amer. Med. Assoc. 236 (24): 2775-2776, 1976.

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Dietary Treatment of Hyperlipidaemia

Susani K. Karta, M.Sc., R.D.

Despite the seemingly great controversy regarding the effect of dietary cholesterol and the type of dietary fat used on total serum cholesterol, in practice, most physicians agree that diet therapy is essential in the treatment of hyperlipidaemia.

Hyperlipidaemia consists of increased plasma levels of cholesterol and/or triglycerides and decrease in high-density lipoprotein (HDL) concentration (1). The increase in cholesterol is associated mainly with a rise in low-density lipoprotein (LDL) concentration, and the increase in triglyceride with a rise in very low-density lipoprotein (VLDL) which transports endogenous triglycerides. High-density lipoprotein carries cholesterol out of the arteries, whereas LDL contributes to cholesterol deposition in the arterial wall. Increased levels of VLDL triglycerides are associated with decreases of HDL cholesterol. Thus, hyperlipidaemia appears to be an important risk factor in the development of atherosclerosis and coronary heart disease (CHD) (1).

Both epidemiological studies and controlled clinical trials have demonstrated that diet and plasma lipids are usually related. The early diet-lipid studies examined the effects of fat quality, cholesterol, and fat quantity on the plasma total cholesterol (total-C) level and other plasma lipids (2). Recently, other dietary factors that affect plasma lipid and lipoprotein levels have been identified (2). Polyunsaturated (omega-6 fatty acids) and monounsaturated fatty acids (MFA), soluble fibre, carbohydrate, and a vegetarian diet favourably affect plasma lipid levels. Saturated fatty acids (SFA), cholesterol, and overweight/obesity are associated with unfavourable plasma lipid responses that increase the risk of CHD. Results of studies of the plasma lipid response to coffee, omega-3 fatty acids, alcohol and protein intakes have not been conclusive, and only general guidelines for their use have been given (2).

The objectives of this review are to discuss the role of the diet in the management of hyperlipidaemia; to suggest the application of some of the recent findings to clinical practice; to recommend the adult cholesterol education programme for the prevention and treatment of hyperlipidaemia; and lastly to outline the procedure in dietary treatment and management for patients. The information presented will benefit practitioners who need a variety of dietary strategies for the management of plasma lipid levels.

Dietary therapy in the management of hyperlipidaemia

Diet is recognized as one of the main external decisive factors of serum cholesterol and triglyceride levels and is the keystone of therapy for all types of hyperlipoproteinaemia (lipoprotein disorders).

Dietary factors which lower blood lipid levels are:
1) weight reduction if overweight or obese;
2) altering the *type* and *amount* of dietary fat;
3) reduce dietary cholesterol intake;
4) increase complex carbohydrate and reduce simple carbohydrate intake.

Weight reduction

Obesity is a risk factor for CHD. It is the main goal for obese individuals with hyperlipidaemia to reduce and maintain a desirable body weight throughout their lifetime (3). Overweight/obesity is associated with elevations in plasma triglycerides, total-C, and LDL-C and with lower levels of HDL-C (2).

Weight loss may be achieved through caloric reduction and/or increase in physical activity. Weight loss appears to have no predictable effect on serum cholesterol (2). Caloric deficit and loss of excess weight, however, usually result in a rapid fall of serum triglyceride level (4.5). Weight loss is associated with inconsistent changes in HDL-C (2). Exercise favourably affects plasma HDL-C levels during a calorie-restricted weight loss programme (5).

Fat quality

The effect on plasma lipids from the major dietary fatty acids is summarized in Table 1 (2). The fatty acid composition of selected foods is presented in Table 2 (6). it is important to note that a number of fatty acids are present in food sources of fat, although often one or more fatty acids are predominant.

I. Saturated and omega-6 (W-6) polyunsaturated fatty acids

Numerous studies have firmly established the hypercholesterolaemic role of saturated fatty acids (SFA) and the hypocholesterolaemic role of W-6 fatty acids (2). The current SFA recommended intake for a prudent diet is less than 10% of total calories (7) and even less than 7% of calories for the treatment of elevated plasma total-C and LDL-C levels (8). Many nutritionists presently recommend that W-6 fatty acid intake should not exceed 10% of calories.

The major W-6 fatty acid is linoleic acid. Several vegetable oils are rich in linoleic acid, including safflower oil, sunflower oil, soybean oil and corn oil (9). The hypercholesterolaemic effects of SFA (present largely in animal fat, coconut fat, and palm kernel oil) and hypocholesterolaemic effect of W-6 fatty acids (present largely in vegetable oils) have been confirmed repeatedly for more than 35 years (2). Both coconut oil and palm kernel oil consist of more than 85% fatty acids in saturated form and less than 15% in unsaturated form (9). Palm oil consists of 52% fatty acids in saturated form and 48% in unsaturated form (9). By comparison, most other vegetable oils contain less than 20% saturated fatty acid (Table 3) (6,9).

The "prudent diet" recommends that dietary fat intake be reduced to 30% of total calories with polyunsaturated to saturated fat (P/S) ratio 1:1 (7). The P/S ratio of fats and oil which was commonly used as an indicator of the W-6 fatty acid and SFA composition in food is not truly reflective of the fat composition in the diet. Practitioners are encouraged to use percent of calories from SFA, MFA, and W-6 fatty acids (rather than P:S ratio) because it provides a more accurate description of the amounts of the respective fatty acid classes in the diet (2).

Table 1: Sources and effect on plasma lipids of major dietary fatty acids*

Fatty acids	Common sources	Major effect on plasma lipids
Saturated		
C12:0 Lauric	palm kernel oil, coconut	increases plasma total-C
C14:0 Myristic	coconut, palm kernel oil	increases plasma total-C
C16:0 Palmitic	palm oil, beef, lard, butter	increases plasma total-C
C18:0 Stearic	beef, lard	decreases plasma total-C, has no effect, raises it less than expected
Unsaturated		
Monounsaturated:		
C18:1 Oleic	olive oil, peanut, sesame	decreases plasma total-C
Polyunsaturated:		
W6		
C18:2 Linoleic	safflower, sunflower, corn, soybean oil	decreases plasma total-C
W3		
C18:3 Linolenic	soybean oil, lecithin	decreases plasma triglycerides
C20:5 Eicosapentaenoic	atlantic and king mackerel	decreases plasma triglycerides
C22:6 Docosahexaenoic	atlantic and pacific fish such as herring, salmon, halibut, sardines, lake trout, chinook, tuna, bluefish, marine lipids (cod liver oil and W-3 fatty acid supplement)	variable LDL-C and HDL-C effects

Source: J. Am. Diet. Assoc. 88(11): 1373, 1988.

Equations developed by Keys et al (11) and Hegsted et al (12) predict that the plasma cholesterol-raising effect of SFA is approximately twice the cholesterol-lowering effect of W-6 fatty acids. Thus, the effect of dietary fat on serum cholesterol is a function of the expression 2S-P where S and P represent, respectively, the quantity of SFA and W-6 fatty acids as a percentage of total calories (13).

Very recently, Bonanome and Grundy reported that a diet high in stearic (hydrogenated soybean oil) significantly reduced plasma total-C and LDL-C levels (14% and 21%, respectively) in comparison to a diet high in palmitic acid (palm oil) (14). The mechanism by which stearic acid may lower plasma total-C and LDL-C as compared to palmitic acid could relate to its rapid conversation to oleic acid (14).

II. Omega-3 (W-3) fatty acids

Omega-3 fatty acids primarily provided by fish and fish oils are hypotriglyceridaemic (2). They are most consistent in reducing plasma triglyceride levels, which appears to be dose-related (15). They are less consistent in reducing plasma total-C levels, which also seems to be dose-related (16).

Omega-3 fatty acids are also anti-thrombotic, as they reduce platelet aggregation and blood clots (17). They are also anti-inflammatory (17). Other cardiovascular benefits of W-3 fatty acids reported include the increased deformability of red blood cells, and in turn, the reduction of blood viscosity (18). However, the amount of W-3 fatty acids required for effective long-term management of plasma lipid levels is not known. The W-3 fatty acids in fish and fish oil are eicosapentaenoic acid (C20:5) [EPA] and docasahexaenoic acid (C22:6) [DHA].

Since there are many questions about the safety of consuming large quantities of marine oils (19), nutritionists and scientists presently (2,17) recommend several fish meals weekly as a source of W-3 fatty acids. Fish that are highest in W-3 fatty acids are found in the North-Atlantic and Pacific Oceans, such as mackerel, salmon, halibut, tuna, lake trout and sardines (Pacific herring) (20). Omega-3 fatty acids are also present in other fish although in lesser amounts.

Other food sources of W-3 fatty acids. i.e. alpha-linolenic acid (C18:3W3), include soybeans and tofu, soybean oil and lecithin, walnuts and walnut oil, wheat germ oil, canola oil and seaweed (21).

Fish oil supplements are not recommended for individuals with normal plasma lipid levels (2,7). At this time it appears prudent to recommend that individuals consume more fish (two to three fish meals per week) because of its association with a decreased incidence of CHD (2). Substituting fish for food high in SFA is an effective strategy for reducing the SFA content in the diet. Marine lipid supplements may, however, be of therapeutic benefit to individuals with clinically elevated plasma triglycerides, although there are still many questions, about their side effects and long-term safety (2). Moreover, it is not clear if fish oil supplements are more beneficial than available drugs. Therefore, recommendations that are based on conclusive scientific information cannot be made at the present time (2).

III. Monounsaturated fatty acids (MFA)

MFA have been shown to lower plasma total-C and LDL-C levels when substituted for SFA in the diet, but HDL-C and triglyceride levels are unaffected (2). A level of 10% to 15% of calories from MFA is recommended. To meet this recommendation and reduce SFA intake, (8) it is evident that the predominant dietary source of MFA should be vegetable oils.

Fat quantity (total fat)

Reports to date suggest that total fat intake influences CHD morbidity and mortality (22); reduction of total fat intake decreases both SFA and calories in the diet; low fat diets affect plasma lipids by virtue of their fatty acid compositon, noted principally by the 2S-P dietary factor. Diets that had the lower 2S-P dietary factor lowered the plasma cholesterol level (10).

Several clinical studies demonstrated that fat quality had a more significant effect on the plasma lipid response than fat quantity; less SFA lowered and more SFA raised total-C and LDL-C; substituting unsaturated fatty acid for SFA without changing the quantity of fat in diet effectively modified plasma lipids.

Presently, it is recommended that the total fat intake not exceed 30% of calories (7).

Table 2: Fatty acid composition of selected foods*

							PUFA			
FOOD ITEM			**SFA**			**MFA**	**W6**	**W3**		
	C12:0	C12:0	C14:0	C16:0	C18:0	C18:1	C18:2	C18:3	C20:5	C22:6
Animal fat										
Beef tallow	—	0.9	3.7	24.9	18.9	36.0	3.6	0.6	—	—
Butter	7.1	2.3	8.2	21.3	9.8	20.4	1.8	1.2	—	—
Lard	0.1	0.2	1.3	23.8	13.5	41.2	10.2	1.2	—	—
Vegetable oil										
Coconut	8.1	6.0	44.6	16.8	8.2	5.8	1.8	—	—	—
Corn	—	0.0	0.0	10.9	1.8	24.2	58.0	0.7	—	—
Olive	—	—	0.0	11.0	2.2	72.5	7.9	0.6	—	—
Palm	—	0.1	1.0	43.5	4.3	36.6	9.1	0.2	—	—
Palm kernel	7.2	47.0	16.4	8.1	2.8	11.4	1.6	—	—	—
Peanut	—	—	0.1	9.5	2.2	44.8	32.0	—	—	—
Safflower	—	—	0.1	6.2	2.2	11.7	74.1	0.4	—	—
Sesame	—	—	—	8.9	4.8	39.3	41.3	0.3	—	—
Soybean	—	0.0	0.1	10.3	3.8	22.8	51.0	6.8	—	—
Sunflower	—	—	—	5.9	4.5	19.5	65.7	—	—	—
Margarine (hard stick)										
Corn	—	—	0.0	9.0	4.2	45.8	17.7	0.2	—	—
Safflower & soybean	—	0.4	0.2	7.0	6.1	31.7	31.3	0.2	—	—
Soybean	—	—	0.2	9.6	6.9	39.1	19.4	1.5	—	—
Sunflower, soybean, cottonseed	—	—	0.1	7.2	4.6	28.5	36.5	0.1	—	—
Margarine (soft-tub)										
Corn	—	—	0.1	9.3	4.7	31.6	30.3	0.9	—	—
Safflower	—	—	0.1	5.8	3.3	23.2	44.5	0.9	—	—
Soybean	—	—	0.1	8.6	4.7	36.4	25.9	0.9	—	—
Soybean & palm	—	0.2	0.2	12.4	4.2	25.1	32.6	1.9	—	—
Frying (heavy duty)										
Beef tallow & cottonseed	—	—	3.4	24.5	17.0	34.2	8.3	0.5	—	—
Palm (hydrogenated)	—	—	—	40.6	6.9	40.6	7.5	—	—	—
Soybean (hydrogenated)	—	—	—	10.9	10.2	73.7	0.3	0.1	—	—
Meat, Fish, Poultry										
Beef, lean only, uncooked	—	—	0.17	1.4	0.74	2.4	0.2	0.01	—	—
Chicken, white meat, uncooked	—	—	0.01	0.3	0.1	0.4	0.2	0.01	—	—
Salmon, coho, raw	—	—	0.3	0.6	0.2	1.2	0.3	0.2	0.3	0.5
Tuna, light, canned in oil	—	—	0.03	1.4	0.1	2.8	2.7	0.07	0.03	0.1

**Source*: USDA *Agricultural Handbook* No: 8-4

Dietary cholesterol

Because dietary cholesterol in hyperlipidaemia patients increases plasma total-C and lipoprotein cholesterol levels, it is recommended that intake not exceed 300 mg/day (7). Dietary cholesterol is less effective in increasing plasma total-C levels than that of SFA (2). The plasma lipid response to dietary cholesterol is affected by other dietary factors including the type of fat in the diet as well as baseline dietary cholesterol intake (23). Within the range of practical interest a 100 mg increase in dietary cholesterol in a 2,500 kcal diet increases plasma total-C by about 4 mg/dL (25).

Table 3: Classification of fatty acids in selected vegetable oils[1]

Oil	% of total fatty acid	
Saturated oil[2]	Saturated	Unsaturated
Coconut oil	92	18
Palm kernel oil	86	14
Palm oil	52	48
Unsaturated oil[2]		
Corn	13	87
Olive	14	86
Peanut	18	82
Safflower	10	90
Sesame	15	85
Soybean	15	85
Sunflower	11	89

[1]USDA *Agriculture Handbook* No. 8-4 — *Fats and Oils*
[2]J.Am. Diet. Assoc. 88(11): 1401, 1988.

Carbohydrate (CHO)

Since dietary fat and CHO are reciprocally related, recommendations to lower total fat are synonymous with recommendations to increase dietary CHO (2). Carbohydrate type (simple versus complex) plays a role in determining the plasma triglyceride response (26). Studies clearly indicate that increased consumption of simple CHO may result in a greater plasma triglyceride response than that observed from complex CHO (27). In general, consumption of a high CHO diet, is associated with favourable effects on plasma lipid level (2).

Many nutritionists recommend that at least 50% of calories be derived from CHO, with an emphasis on complex CHO.

Dietary fibre

In some other studies, the negative decline on the average per capita consumption of fibre is reciprocally correlated with the increase in population CHD mortality rates (28).

Insoluble fibre such as wheat bran, appears to have little effect or no effect on blood cholesterol levels. Soluble fibres which include legumes, oats, pectins, and certain gums have been reported to lower the plasma total-C and LDL-C but without changing the HDL-C level (2). Increasing soluble dietary fibre in the management of plasma lipids, may lead to additional reductions in total-C of 1% to 10% (2). Caution is advised against adding fibre either too quickly or in excessively large amounts because of abdominal discomfort, such as flatulence.

Nutritionists recommend that individuals obtain fibre from food, not supplements. The consumption of a variety of foods high in different fibres is the most acceptable and safe method for increasing fibre intake. Current recommendations are to increase fibre intake initially to 20 to 25 gm/day but not to exceed 40 to 50 gm/day (2).

Recommendations for the adult cholesterol education programme

Recently, the U.S.-National Cholesterol Education Program (NCEP), a project of the National. Heart, Lung and Blood Institute of the National Institutes of Health published the NCEP report to provide guidelines for the medical health profession on the treatment of high blood cholesterol in adults 20 years of age and over about the merits of dietary, rather than pharmacologic, intervention in the management of hyperlipidaemia (8).

The NCEP report outlines the guidelines for the classification of patients by total cholesterol and low-density lipoprotein (LDL) cholesterol levels (Table 4). The classification by total cholesterol level identifies desirable blood cholesterol as < 200 mg/dL, borderline high blood cholesterol as 200 to 239 mg/dL, and high cholesterol as 240 mg/dL and above (8).

Table 4: Classification of risk based on total cholesterol and LDL-cholesterol*

Classification	Blood Cholesterol	LDL-Cholesterol
Desirable	< 200 mg/dL	< 130 mg/dL
Borderline-high-risk	200-239 mg/dL	130-159 mg/dL
High-risk	> 240 mg/dL	> 160 mg/dL

**Based on* U.S. *Cholesterol Education Program for Adults,*
Source: J.Am. Diet. Assoc. 88(11): 1373, 1988.

The LDL-cholesterol level is the key index for making decisions about treatment. The level considered as desirable LDL-cholesterol is <130 mg/dL, borderline risk LDL-cholesterol is 130 to 159 mg/dL and high risk LDL-cholesterol is 160 mg/dL or greater (8).

The initial classification and the recommended causes of actions are shown in Figure 1. In addition to cholesterol measurement, adults should be evaluated for other CHD risk factors which include male sex; family history of premature CHD (sudden death before age 55); cigarette smoking (more than 10 cigarettes per day); hypertension; low HDL-cholesterol concentration (below 35 mg/dL); diabetes mellitus; obesity (>than 30% overweight); history of cerebrovascular or occlusive peripheral vascular disease (8).

The classification and treatment decisions based on LDL-cholesterol levels are shown in Figure 2. Those patients with borderline high-risk LDL-cholesterol levels who have definite CHD or two other risk factors should have a complete clinical evaluation and begin treatment to lower blood cholesterol levels.

The recommended dietary therapy includes two steps: the Step-One and Step-Two Diets (Figure 3). In the Step-One diet, saturated fatty acids are reduced to less than 10% of calories and cholesterol to less than 300 mg/day (8).

If the initial goals of therapy are not achieved by 3 months (Figure 4), the patient should be referred to a qualified/registered dietitian for another attempt at the Step-One diet or progress to the Step-Two diet. In the Step-Two diet, saturated fatty acids intake is less than 7% of calories, and cholesterol intake is less than 200 mg/day (8). Adoption of either the Step-One or the Step-Two diet is facilitated by referral to a qualified/registered dietitian. Early involvement of the dietitian may shorten the time needed to reach the goals of therapy.

The report recommends dietary therapy for a minimum of 6 months. After therapy with the Step-One diet is begun, the serum total cholesterol and LDL-cholesterol levels should be measured at 4 to 6 weeks and again at 3 months . At the end of 3 months there should be an assessment of the patient's adherence to the diet and response to dietary therapy.

The minimal goal of therapy is: (a) to reduce LDL-cholesterol to below 160 mg/dL if the patient has neither definite CHD nor two other CHD risk factors or (b) to reduce LDL-cholesterol to below 130 mg/dL if definite CHD or two other CHD risk factors are present (8). Serum total cholesterol levels of 240 mg/dL and 200 mg/dL correspond to LDL-cholesterol levels of about 160 mg/dL and 130 mg/dL, respectively. Once the LDL goal has been met, long-term monitoring can begin. If the response is not satisfactory, the patient should be referred to a qualified/registered dietitian for another trial on the Step-One diet or should progress to the Step-Two diet. If the retrial for the Step-One diet is not successful, the Step-Two diet should be initiated if the response is still not satisfactory (9).

With the Step-Two diet, dietary assessment and total cholesterol levels should be evaluated after 4 to 6 weeks and 3 months of the therapy. After 3 months of treatment with the Step-Two diet, if the desired goal for serum cholesterol lowering has been attained and a measurement of LDL-cholesterol level confirms that the LDL goal has been met, long-term monitoring can begin. If optimal dietary therapy is unsuccessful, then consideration should be given to drug therapy (9).

The degree of reduction of total and LDL-cholesterol levels that can be achieved by dietary therapy depends on variable factors, including the composition of the dietary habits before hand, the initial plasma total-C level (persons with higher levels usually have the greatest mg/dL decrease in total and LDL-cholesterol concentrations than do persons with relatively low blood cholesterol levels) (8). In addition, individual responsiveness to the composition of the modified diet, the degree of compliance with it, and changes in bodyweight will affect the plasma cholesterol response (8).

Implementation of dietary treatment of hyperlipidaemia

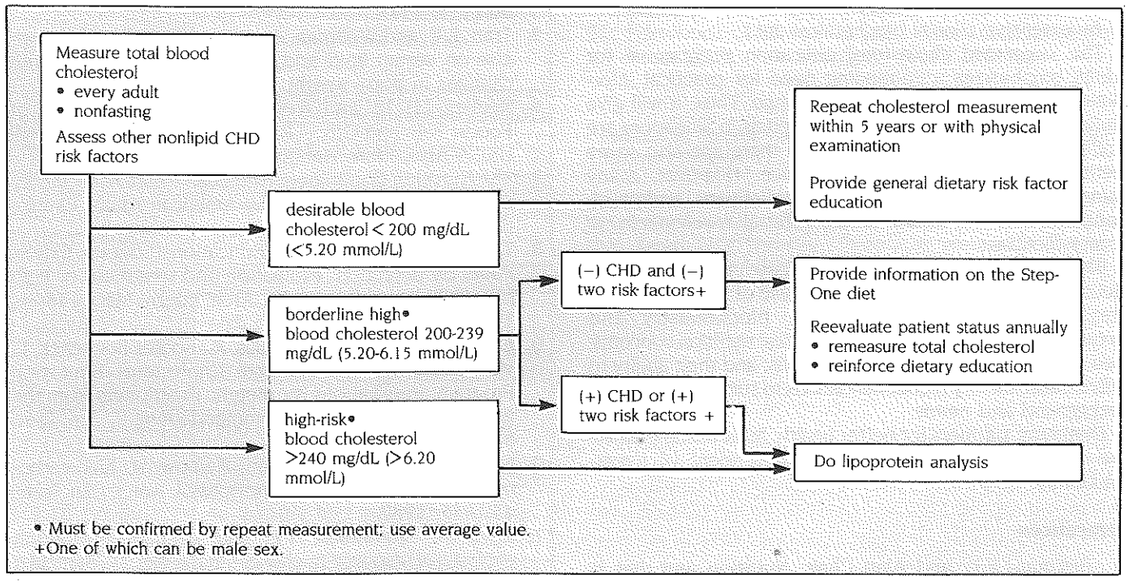
Since dietary treatment alone can be effective in lowering blood lipids in many individuals with high plasma lipids concentration, it should be the first approach to the treatment of hyperlipidaemia.

One-Step Concept is a single basic diet for all the common forms of hyperlipidaemia (1). This low calorie, low saturated fat, low cholesterol and high complex carbohydrate diet that is appropriate for patients with hyperlipidaemia is a prudent diet for the population at large (1). It limits the intake of animals and saturated fats, with emphasis on unsaturated vegetable oils within recommended limits, fish and high complex carbohydrates. This diet is effective in lowering both cholesterol and triglyceride-rich lipoprotein. However, it should be individualized to fit the particular lipid disorder in the patient. With the different traditional, ethnic and cultural backgrounds of Singaporeans, dietary instruction must be individualized. Therefore, the handing out of "standard" diet sheets is strongly discouraged. Advice should consist of simple messages adapted to the foods of the specific ethnic group, and techniques and written materials must be suitable for the individual and family.

The dietitian's role in treatment of hyperlipidaemia

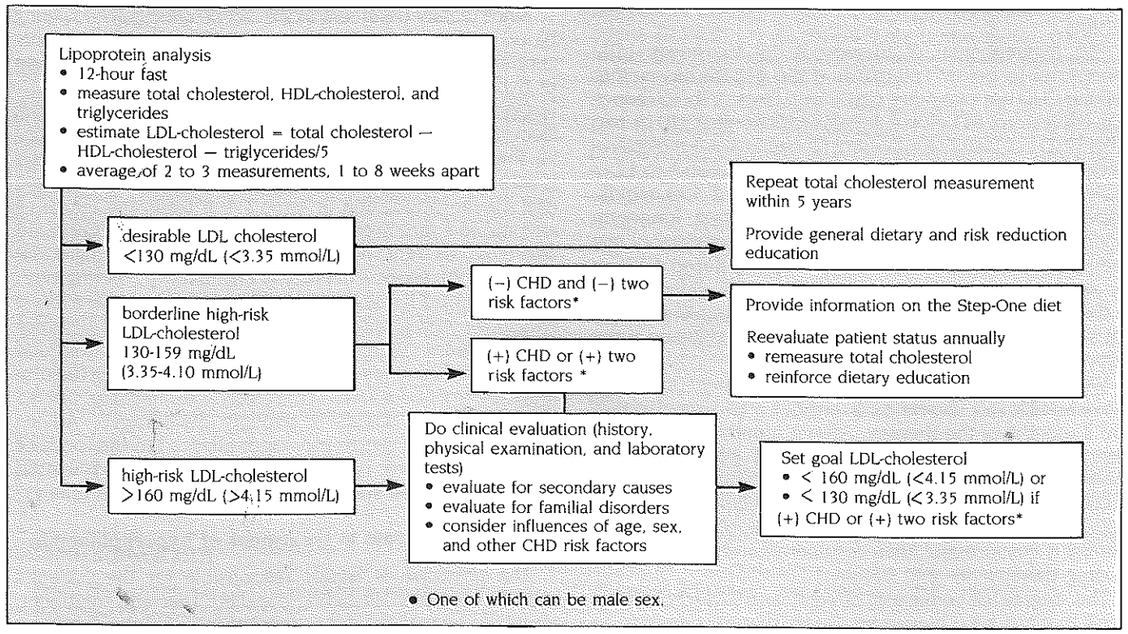
The physician is legally responsible for the patient's medical care plan, including the diet order and treatment. However, he may delegate the formulation of the diet order to the dietitian or he may formulate the prescription in consultation with the dietitian. To facilitate the dietitian in formulating the prescription, the diet order/request should provide information for the following three principal areas in nutrition assessment: clinical information, previous dietary treatment, biochemical data (31). The dietitian needs to be familiar with the patient's medical diagnosis, dietary background and laboratory results such as cholesterol and

Figure 1: Initial classification of patients based on total cholesterol recommendations*



**Based on* U.S. *Cholesterol Education Program for Adults,*
Source: J. Am. Diet. Assoc. 88(11): 1401, 1988

Figure 2: Classification of patients base on LDL-cholesterol recommendations.*



* *Based on* U.S. *Cholesterol Education Program for Adults. Source:* J.Am. *Diet. Assoc.* 88(11): 1401, 1988.

lipid profile analysis before proceeding with the nutritional assessment and diet consultation.

The proper nutritional assessment programme will involve the following steps: (31)

1) Identification of nutritional problems;
2) Preliminary nutritional screening criteria:
   a) initial laboratory tests which are nutrition related
   b) initial patient interview
3) In-depth nutritional assessment:
   a) comprehensive dietary history
   b) extensive clinical biochemical data

The suggested cholesterol education programme for adults emphasizes a continuing need for practical information that will facilitate dietary change. Thus, it will give dietitians new oportunities. Most hospitals in Singapore are staffed with qualified dietitians, and there are also some dietitians working in private practice. However, many community-based clinics do not have dietitians, and physicians need to be aware of the referral mechanisms to access dietitians.

There is a need to establish guidelines recognizing dietitians as valuable resources because of: their academic preparation in human nutrition, biochemistry and metabolism; their ability to apply practical nutrition concepts; their counselling and motivational skills; and their ability to individualize dietary recommendations to suit the individual's background and needs.

Dietitians, partners for better health, must assume an active role in the prevention and management of hyperlipidaemia.

References

1. Bierman, E.L. and Alan Chait: Nutrition and diet in relation to hyperlipidaemia and atherosclerosis. In. Shils, M.E. and Young, V.R.; Modern Nutrition in Health and Disease, Seventh ed., Philadelphia, Lea & Febiger, 1988.
2. Kris-Etherton, P.M., Krummel, D., Dreon, D., Mackey, S., Borchers, J. and Wood, P.D.; The effect of diet on plasma lipids, lipoproteins and coronary heart disease. J.Am. Diet. Assoc. 88:1373, 1988
3. National Dairy Council: Nutrition advice for the healthy United States population. Dairy Council Dig 58:31, 1988
4. Kudchodkar, B.J. et al: Effect of acute calorie restriction on cholesterol metabolism in man. Am. J. Clin. Nutr. 30:1135, 1977.
5. Tran, Z.V. and Weltman, A.: Differential effects of exercise on serum lipid and lipoprotein levels seen with changes in body weight. JAMA 254:919, 1985
6. Reeves, J.B. III, and Weihrauch, J.L.: Composition of Foods: Fats and Oils — Raw, Processed and Prepared. USDA Agriculture Handbook No. 8-4, 1987.
7. The Nutrition Committee, American Heart Association: Dietary guidelines for healthy American adults. Circulation 77:721A, 1988.
8. The National Cholesterol Education Program Expert Panel on detection, evaluation and treatment of high blood cholesterol in adults. Arch. Intern. Med. 148:36, 1988.
9. Ernst, N.D., Cleeman, J., Mullis, R., Sooter-Bochenek, J., Van Horn, L.: The National Cholesterol Education Program: Implications for dietetic practioners from the adult treatment panel recommendations. J. Am. Diet. 88:1401, 1988.
10. Nichaman, M.Z., and Hamm, P.: Low-fat, high-carbohydrate diets and plasma cholesterol. Am. J. Clin. Nutr. 45:1155, 1987.
11. Keys, A., Anderson, J.T. and Grande, F.: Serum cholesterol response to changes in the diet. IV. Particular saturated fatty acids in the diet. Metabolism 14:776, 1975
12. Hegsted, D.M., McGandy, R.B., Meyers, M.L. and Stare, F.J.: Quantitative effects of dietary fat on serum cholesterol in man. Am. J. Clin. Nutr. 17:281, 1965
13. Anderson, J.T., Grundy, F., and Keys, A.: Cholesterol-lowering diets, J.Am. Diet. Assoc. 62:133, 1973.
14. Bonanome, A. and Grundy, S.M.: Effects of dietary stearic acid on plasma cholesterol and lipoprotein levels., N. Engl. J. Med. 318:1244, 1988.
15. Simons, L.A., Hickie, J.B., and Balasubramaniam, S.: On the effects of dietary W-3 fatty acids (MaxEPA) on plasma lipids and lipoprotein in patients with hyperlipidaemia. Atherosclerosis 54:75, 1985.
16. Herold, P.M., and Kinsella, J.E.: Fish oil consumption and decreased risk of cardiovascular disease: a comparison of fndings from animal and human feeding trials. Am. J. Clin. Nutr. 43:566, 1986.
17. National Dairy Council: Nutrition and health effects of unsaturated fatty acids. Dairy Council Dig. 59:1, 1988.
18. Leaf, A., and Weber, P.C.: Cardiovascular effects of n-3 fatty acids. N. Engl. J. Med. 318:549, 1988.
19. Omega-3 fatty acids: Eat fish, or fish oils? CNI Weekly 17:6, 1987.
20. Hepburn, F.N., Exler, J., and Weihrauch, J.L.: Provisional tables on the content of omega-3 fatty acids and other fat components of selected foods., J. Am. Diet. Assoc. 86:788, 1986.
21. Weiner, A.M.: Cholesterol in foods rich in omega-3 fatty acids (letter)., N. Engl. J. Med. 315:8331, 1986.
22. Gordon, T., Kagan, A., Garcia-Palmieri, M., Kannel, W.B. Zukel, W.J., Tillotson, J., Sorlie, P., and Hjortland, M.: Diet and its relation to coronary heart disease and death in three populations. Circulation 63:500, 1981.
23. Zanni, E.E., Zannis, V.I., Blum, C.B., Herbert, P.N., and Breslow, J.l.: Effect of egg cholesterol and dietary fats on plasma lipids, lipoproteins, and apoproteins of normal women consuming natural diets. J. Lipid Res. 28:518, 1987.
24. Katan, M.B., Beynen, A.C., and de Vries, J.H.M.: Existence of constant hypo- and hyper-responders to dietary cholesterol in man. Am. J. Epidemiol 123:221, 1986.
25. Hegsted, D.M.: Serum-cholesterol response to dietary cholesterol: A reevaluation. Am. J. Clin. Nutr. 44:299, 1986.
26. Glinsmann, W.H., Irausquin, H., and Park, Y.K.: Evaluation of health aspects of sugar contained in carbohydrate sweeteners. Report of Sugars Task Force, 1986. J. Nutr. (Suppl) 116:55, 1986.
27. Castelli, W.P.: The triglyceride issue: A view from Framingham. Am. Heart. J. 112-432, 1986.
28. Stamler, J.: Population studies. In Levy, R., Rifkind, B., Dennis, B., and Ernst, N., eds.: Nutrition, Lipids, and Coronary Heart Disease. New York: Raven Press, 1979.
29. Floch, M.H., Maryniuk, M.D., Bryant, C., Franz, M.J., Tietyen-Clark, J., Marotta, R.B., Wolever, T., O'Sullivan Maillet, J., and Jenkins. A.L.: Practical aspects of implementing increased dietary fiber intake. Nutr. Today 21:27, (Nov/Dec), 1986.
30. Grundy, S.M., Bilheimer, D., Blackburn, H., Brown, W.V., Kwiterovich, P.O., Matbon, F., Schonfeld, G., and Weidman, W.H.: Rationale of the diet-heart statement of the American Heart Association. Report of the Nutrition Committee. Circulation 65:839, 1982.
31. Handbook of Clinical Dietetics. The American Dietetic Association. Yale University Press, 1981.

Figure 3: Dietary therapy for high blood cholesterol*

Nutrient	Recommended Intake	
	Step One diet	*Step Two diet*
total fat	Less than 30% of total calories	
saturated fatty acids	Less than 10% of total calories	Less than 7% of total calories
polyunsaturated fatty acids	up to 10% of total calories calories	
monounsaturated fatty acids	10% to 15% of total calories	
carbohydrates	50% to 60% of total calories	
protein	10% to 20% of total calories	
cholesterol	Less than 300 mg/day	Less than 200 mg/day
total calories	to achieve and maintain desirable weight	

* *Based on* U.S. *Cholesterol Education Program for Adults.*

**Presented at National Heart Week 1988, Medical Forum — Update on Cholesterol, December 11, 1988, Singapore.*

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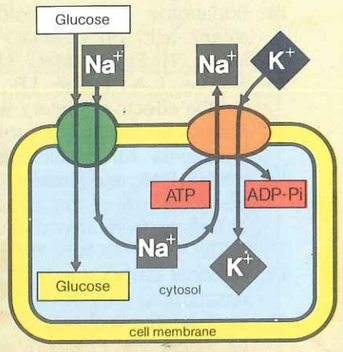

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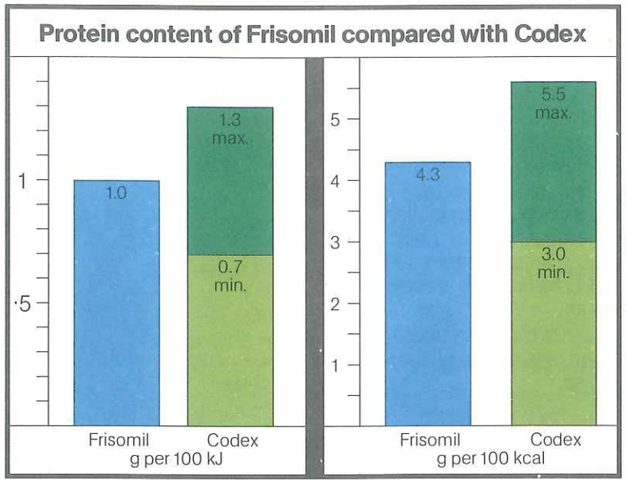

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NUTRITION QUIZ:

"The Cholesterol Countdown" Crossword

Ho Fong, B.Sc., Grad. Dip. Diet.

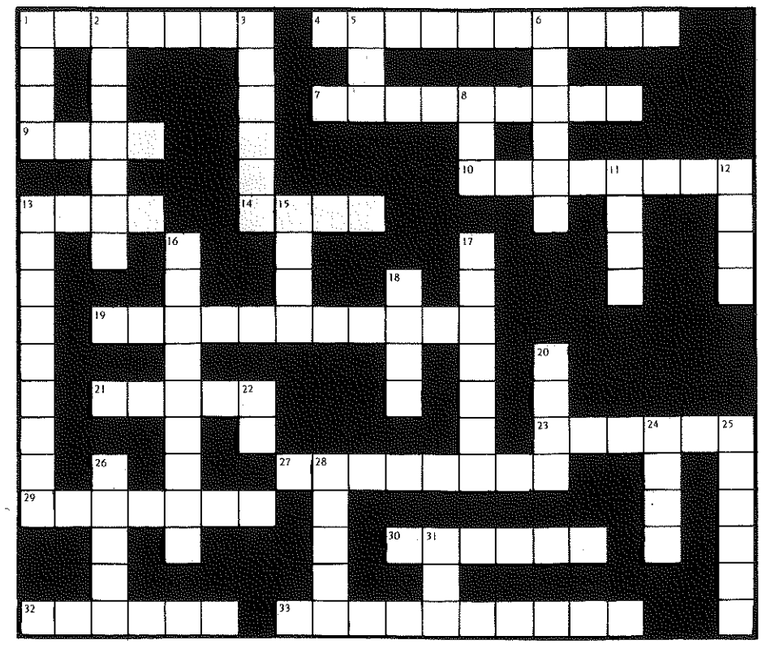
Here is a novel way to test your knowledge of cholesterol-lowering dietary principles — you may also like to use it as a teaching aid for selected clients. Answers can be found on page 21.

ACROSS

1. Type of oil, which, although vegetable in origin, is mainly saturated.
4. A food group which is rich in vitamins, minerals and fibre.
7. Type of fat which raises blood cholesterol levels.
9. A high fat snack food.
10. An ingredient to be used sparingly in salads.
13. At approximately 280mg each, they are one of the top contributors to dietary cholesterol.
14. That part of an egg to be restricted for people on a cholesterol-lowering diet.
19. A white fatty substance, which, when elevated in the blood, is a major risk factor for coronary heart disease.
21. A cooking method which uses no oil.
23. A nut rich in monounsaturated fat.
27. A milk rich in protein yet low in fat and cholesterol-free.
29. A type of processed fatty meat.
30. Dietary guidelines recommend that not more than % of our total calories should come from fat.
32. This cooking method increases the fat and calorie content of foods.
33. Type of rice which is more nutritious.

DOWN

1. A vegetable oil rich in polyunsaturated fat.
2. A low-fat cheese.
3. A type of white meat.
5. One of the omega-3 fatty acids in fish oil (abbreviation).
6. Replace this with polyunsaturated margarine as a spread or in baking.
8. A general term for meats with a higher fat content.
11. That part of poultry to be removed before cooking.
12. A type of saturated fat often used in Indian cooking.
13. These should form part of a calorie-restricted weight loss programme.
15. A breakfast cereal rich in soluble fibre.
16. Products which have a high fibre content.
17. Type of fibre which reduces blood cholesterol levels.
18. A seafood rich in cholesterol.
20. That part of a wheat grain removed in the processing of white flour.
22. _____/dL is a measurement unit for blood cholesterol levels (abbreviation).
24. _____ weight and obesity increase the risk of developing heart disease.
25. A local fruit containing significant amounts of fat.
26. A favourite dish, which made traditionally is rich in saturated fat.
28. Type of meat to be restricted for those on a cholesterol-lowering diet.
31. That commonly known as "the good cholesterol" (abbreviation).



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Health Foods — Are They Really Healthier?

Anna Jacob, M.Sc. and Lynn Alexander, B.Sc.(Hons)

Health food has come to Singapore — and some people are into it in a big way. It is common to see customers leave a health food store with not just one but several boxes of pills and potions — and a hefty bill to match. But is "health food" really, as its name implies, necessary for health? Or perhaps "there is no such thing as a 'health food', only a health food industry" (1).

This article, based on reviews by major dietetic bodies and nutrition experts, describes the various types of "health foods" available on the market, and suggests how dietitians should respond to the claims of the health food industry.

Motivated by fear of "poisons" and the desire to feel fit and healthy, large numbers of the public are convinced that health foods are a good investment. The term "health food" inspires confidence, readily bolstered by health food literature that promises cure and prevention from eating chemical-free foods and taking nutritional supplements. At present, however, the health food promise of better health is as yet unsubstantiated by scientific evidence. And ironically, the biggest boom in the health food industry has been in the processed snacks, canned and ready-to-eat foods that health food consumers initially rejected as unwholesome.

The term "health food" covers organic, natural or pesticide-free foods, diet aids and supplements.

Organic foods

Organic foods are either plant products grown in soil enriched with humus and compost on which no pesticides, herbicides or inorganic fertilisers have been used, or meat and dairy products from animals raised on "natural" feeds and not treated with drugs such as hormones and antibodies (2).

Most food sold to consumers today does contain pesticide residues, and these are certainly not good for health. Strict market checks conducted by government agencies, however, help ensure that the amounts present in foods are extremely small — usually only a few parts per billion (2).

Pesticides are used to reduce crops lost to pests, and thus abandoning pesticides will mean lower yields and higher food prices. At present, thorough washing of all farm produce is the best means of reducing pesticide consumption.

Hormones and antibiotics, are routinely added in small amounts to the feeds of farm animals. Hormones promote growth, while antibiotics are used to suppress infections that might limit growth. These practices can have deleterious effects. Large amounts of hormones added to animal feeds have been suspected to be responsible for an unusally high incidence of precocious sexual development among children in some countries such as Puerto Rico (3). The use of antibiotics — the same antibiotics which are used in human medicine — unfortunately promotes the development of resistant organisms, thereby posing a threat both to the livestock and to ourselves.

Scientists and government officials have long recommended an end to these practices, and the absence of feed additives in organically produced livestock is definitely a plus point for consumer health.

Besides the safety aspect, supporters of organically grown produce also claim it has higher nutrition content and taste. Nutritionally there is very little difference in the content of food grown with natural or chemical fertilizers. However, the trace mineral content may vary depending on the minerals present in the soil. Soils that are organically fertilized are more likely than chemically fertilized to be deficient in trace minerals. Furthermore, no amount of fertilizer, organic or synthetic, will bring up the vitamin A content of a carrot or the vitamin C content of an orange. The major nutrients in the plant are determined by its species and not by the fertilizer utilised (2).

Any superiority noted in taste is perhaps more likely to result from the relative freshness of the organic produce (due to small-scale production and local marketing) rather than to the fact that it is "organically grown".

People are easily alarmed by the thought of "chemicals" in food, but it has to be realised that some of the chemicals naturally present in food present a far greater danger than traces of agricultural residues.

If people are convinced that the supposed benefits of organic foods justify the economic cost of using them then they are perfectly entitled to do so. But they should not be coerced into thinking organic foods are necessary.

Table 1: Some common reasons for use of health foods.*

Reasons for use	Products used	Comments
To correct dietary deficiencies	Vitamins) Minerals)in isolated form or Amino acids)in combination Kelp (a source of minerals) Aloe vera (sugars, vitamins and minerals)	Probably surplus to requirements in most cases. Considerable dangers from over-use
To supply 'nutrients' deficient in a normal diet	Vitamins B13, B15 and B17 Flavanoids Inositol Lecithin	No evidence that supplements of these are necessary. 'B17' (laetrile) has now been banned from sale
To restore vigour	Ginseng Honey Kelp Pollen Bee's royal jelly Spirulina	Ginseng has certain pharmacological effects although these are variable and unpredictable. Problems with over-use have been reported. The remaining substances may provide traces of vitamins and/or minerals (at a price) but little in the way of magic.
Rejuvenation/to retard ageing	DNA and RNA	The body makes all the DNA and RNA it needs. Dietary excess can cause hyperuricaemia
To 'cleanse' the body of toxins	Cider vinegar Garlic	In the absence of severe liver or renal disease, the body is quite capable of doing this for itself
As a slimming aid	Spirulina Cidar vinegar Lecithin	Claims that substances can burn up fat or stimulate metabolism are nonsense.
As a cure	Aloe vera (arthritis) Green lipped mussel (rheumatism) Kelp (healing) Herbal remedies	It should be borne in mind that chronic disorders such as arthritis and rheumatism tend to have periods of partial remission in any case. A skilled herbalist may well be able to relieve minor ailments via the pharmacological effects of some plants, but indiscriminate uuse of these remedies by the uninformed can be dangerous.
Because they are 'natural'	'Natural' as distinct from 'synthetic' vitamins Sea salt	By definition, a synthetic vitamin must be identical to a natural one or it wouldn't be a vitamin. People often assume that anything 'natural' is automatically superior to anything manufactured. They should be reminded that some of the most toxic substances known to man (e.g. certain plant alkaloids or botulinus toxin) are 'natural'.

**Based on Reference* (5).

Natural foods

Natural foods are those made from ingredients of plant or animal origin, which are altered as little as possible and which contain no synthetic or artificial ingredient or additive (4).

The "back-to-nature" movement introduced to the market "wholefoods", such as brown rice, dried fruit, wholewheat pasta and muesli, which can certainly form part of a healthy diet. But because people are willing to pay a premium price for health foods, health food stores often sell these foods at two or three times the price of comparable foods sold in supermarkets. Moreover, these expensive items are often of inferior quality, and unless you buy from a store that is exceptionally clean and has a high

A Short Glossary of Health Foods*

ACIDOPHILUS

Available as suspensions in milk or as powder or tablets, *Lactobacillus acidophilus* bacteria produce lactic acid which may be useful in creating an acid environment in the bowel such that less desirable bacteria cannot thrive. It is sometimes used in the same way as yogurt, to regenerate intestinal flora after antibiotic treatment or other conditions which upset the microfloral balance in the gut. Acidophilus milk need not be prepared by fermentation, but can simply be produced by adding freeze-dried acidophilus culture to milk and refrigerating immediately. It is therefore less sour than yogurt.

ALFALFA

Tablets or powder made from dried alfalfa leaves are rich in protein, calcium, trace minerals, carotene, Vitamins E and K and water-soluble vitamins. Alfalfa is sometimes promoted as a treatment for diabetes, but no evidence for this is reported. Recent research indicates saponins it contains may be hypocholesterolaemic.

ALOE VERA

This is derived from the leaves of the aloe vera plant, a cactus-like plant of the lily family native to southern Africa. It is claimed to cure pain, insomnia, baldness, ulcers and other ailments, and also incorporated in skin-care products, shampoos etc. Aloe vera juice contains moderate vitamin C and some minerals and is claimed to relieve ulcers and arthritis, without any scientific evidence.

BEE POLLEN

Bee pollen is a mixture of bee saliva, plant nectar and pollen extolled as a cure for various conditions including colitis and skin blemishes. Scientific literature on the healthful properties of bee pollen is almost nil. Allergic patients should be alerted to possible dangers of taking it as the pollen could cause allergic rhinitis or other symptoms.

BREWERS' YEAST

A by-product from the brewing of beer and ale, brewers' yeast is a rich supplemental source of B-vitamins, chromium and selenium. Chromium is present in an organic form which is much more beneficial than its inorganic form.

GINSENG

Ginseng is claimed to be a general tonic for digestive problems, impotence and lack of vitality. Ginseng products are of variable composition. Ginseng does have various pharmacological effects which are unpredictable. Problems with over-use have been reported and some susceptible individuals may show a rise in blood pressure after consuming ginseng.

CAROB

Carob is the fruit pod of a leguminous Mediterranean tree. Carob powder is the ground pod, minus the seeds. The seeds are the source of carob gum (also known as locust bean gum), which is used by food processors as a stabiliser and thickener. Carob powder is used as a low fat alternative to cocoa powder, but calorie-wise it is almost as high as cocoa due to its very high carbohydrate content. Some users favour it as it does not contain the caffeine-like stimulant theobromine which is found in cocoa.

CRANBERRY JUICE

Cranberry juice is purported to reduce the risk and severity of urinary tract infections by increasing the acidity of the urine. This is not borne out by scientific studies.

DESSICATED LIVER

This an excellent source of iron, chromium, copper, selenium,and vitamin B12. It is also rich in fat and cholesterol unless it has been defatted. It can be added to foods such as gravies and sauces, but imparts a liver flavour. The high nucleic acid content makes it undesirable for individuals with gout.

DOLOMITE

Dolomite limestone contains roughly equal amounts of calcium carbonate and magnesium carbonate. Commonly used in antacids, it may be a useful source of magnesium and calcium for those in need of supplementation.

GARLIC

Garlic has been found to have mild hypoglycaemic properties and is a moderate diuretic and vasodilator. Recent research suggests it may be useful in preventing atherosclerosis and high blood pressure. Some evidence also exists of anti-tumour properties of garlic, but the evidence of all these effects is not yet strong enough to market it as a medicinal.

GELATIN

This is a protein derived from the bones of cattle and used extensively in food industry for its gelling qualities. It has gained a reputation for improving structure and toughness of finger nails, but the few clinical studies demonstrating this were not well-controlled and have not provided adequate proof of the gelatin fingernail hypothesis.

KELP

Kelp is a giant seaweed which is mechanically harvested, dried and then ground. The best of the harvest is used to make kelp tablets and seaweed powder for human consumption while the bulk of the crop is sold for animal feed. Kelp is a good source of iodine — in most brands one tablet contains roughly the US RDA of 150mcg. Kelp also contains small amounts of other minerals and vitamins. Various therapeutic claims for this seaweed have not been substantiated.

LECITHIN

Lecithin is phosphatidyl choline, obtained from many foodstuffs and synthesised by the body. It is an approved food additive used as a stabiliser and emulsifier. There is no evidence that lecithin is valuable nutritionally, and claims that it prevents or cures heart disease, arthritis or nervous disorders are as yet unsupported by scientific evidence, although many consider further clinical trials worthwhile. Taking large doses of lecithin or choline is inadvisable as it produces gastrointestinal distress, sweating and anorexia. Prolonged ingestion of large doses may upset the balance of brain neurotransmitters.

ROYAL JELLY

This is a milky white substance produced by worker bees to nourish the queen bee. Promoters imply that royal jelly will do as much for humans as it does for queen bees, i.e. it will increase growth, longevity and fertility. It is a rich source of pantothenic acid and certain other B vitamins, but has not been shown to possess any special health benefits.

SPIRULINA

A type of algae, *Spirulina maxima* has been promoted heavily as a remedy for diabetes, hay fever, anaemia, ulcers and liver disease. Aside from one study which showed it may be slightly hypocholesterolaemic, evidence for any other effects is sorely lacking. It does contain vitamin B12, but most is in the form of analogues which have no biological activity.

SUPEROXIDE DISMUTASE (SOD)

This is an anti-oxidant enzyme contained in most body cells. It is promoted as beneficial for arthritis, urological disorders and to counteract side effects of radiation therapy. Its action is currently under investigation. Some promoters claim it can reverse ageing but as yet there is no evidence that it increases life span; in fact there is no evidence that ingesting SOD tablets even increases tissue levels of the enzyme.

TORULA YEAST

Cultured specially as a foodstuff for man and animals, dried torula yeast is an excellent source of high quality protein, minerals and B vitamins including B12. Its advantage over brewers' yeast is that it is tasteless; it is low in chromium, however, when compared to brewers' yeast.

**adapted from Reference 6*

product turnover, you may find an unexpected "bonus" in some health food products — insects! This is particularly a problem in grains, dried fruits and nuts which are free of preservatives and sold in bulk.

It should be remembered that "natural" or "whole" does not always equal "healthy" in every context, and it is important to read labels of such products, some of which may be high in fat and calories.

Dietary aids and supplements

Nutritionists and dietitians are most concerned about the easy availability of so-called "diet aids" and nutritional supplements. A vast array of substances are marketed for a variety of purposes (see Table 1).

Some of these products may appear to work owing to the power of the placebo effect. But these supplements must not simply be dismissed as placebos since they are not inert substances. In fact they may have powerful pharmacological effects, although not those necessarily claimed for them. While the harmful effects of excessive quantities of certain isolated vitamins are now well-documented, possible effects of amino acid supplements and some minerals such as selenium, and of substances such as ginseng, have never been fully explored.

Even if consumed at a level which is not harmful, the use of supplements should be discouraged as in most instances they provide nutrients which are surplus to requirements. They may even supply supposed "nutrients" which are in fact not needed at all. Their use as remedies for various ailments may have little scientific justification and may lead to delay in seeking, or even abandoning, proper medical attention.

The use of supplements stems from ignorance of basic nutrition. Furthermore, those who are most susceptible to health food claims are perhaps those who can least afford them, and the money spent on these products could be better directed elsewhere. Dietitians have therefore a crucial role to play in educating the public on what constitutes a balanced diet and how eating for optimal health may be achieved through the correct choice of regular foods available in the local wet markets, supermarkets and provision shops.

References

1. Bender A.E.: Health or Hoax. Elvendon Press: Reading, 1985.
2. Brody, J.: Jane Brody's Nutrition Book. W.W. Norton and Company: New York, 1981.
3. Bongiovanni, A.M.: An epidemic of premature thelarche in Puerto Rico. J. Paediatr. 103(2): 245-6, 1983.
4. The American Dietetic Association: Handbook of Clinical Dietetics. Yale University Press: New Haven, 1988.
5. Thomas, B. (ed): Manual of Dietetic Practice. The British Dietetic Association. Blackwell Scientific Publications: Oxford, 1987.
6. Lasswell, A.B., Roe, D.A. and Hochheiser, L.: Nutrition for Family and Primary Care Practitioners. George F. Stickley: Philadelphia, 1986.

Answers to Nutrition Quiz on Page 16.

ACROSS	DOWN
1. Coconut	1. Corn
4. Vegetables	2. Cottage
7. Saturated	3. Turkey
9. Nuts	5. EPA
10. Dressing	6. Butter
13. Eggs	8. Red
14. Yolk	11. Skin
19. Cholesterol	12. Ghee
21. Steam	13. Exercises
23. Almond	15. Oats
27. Soyabean	16. Wholemeal
29. Sausage	17. Soluble
30. Thirty	18. Crab
32. Frying	20. Bran
33. Unpolished	22. mg
	24. Over
	25. Durian
	26. Curry
	28. Organ
	31. HDL

BOOK REVIEW:

The Right Dose — How to Take Vitamins and Minerals Safely

reviewed by Anna Jacob, M.Sc.

The Right Dose — How to Take Vitamins and Minerals Safely
by Patricia Hausman, M.S.
The Rodale Press, Emmaus, Pennsylvania, 1987.

The result of two years of intense research on what can and cannot go wrong while taking oral nutritional supplements, "The Right Dose" is a large edition of interesting material on nutritional supplements. It is meant to serve as a reference manual not a medical or self-treatment guide.

Patricia Hausman, the author, is a qualified nutritionist with a Master's Degree, who has served on the staff of the Centre for Science in the Public Interest, Washington D.C. Also to her credit are the following books:-

- Jack Spratt's Legacy: The Science and Politics of Fat and Cholesterol — 1981
- Foods that Fight Cancer — 1984
- At-a-glance Nutrition Counter — 1984
- The Calcium Bible: How to have better bones all your life — 1985.

Ms Hausman is well aware of the instant distrust that all nutritionists and dietitians have of oral nutritional supplements. According to her "this bias is deeply rooted in our history and there is good reason for it. Nutritionists naturally are deeply concerned about your health. And frankly, nutritionists ..... have seen too many cases of what is described not as supplement use but as supplement abuse. This book is about putting supplements to work for you — safely."

The book is a result of scouring the Medline Data Base of the National Library of Medicine, Washington, D.C., as well as reports of scientific committees, including an exhaustive study commissioned by the Food and Drug Administration in 1970 to review safety of all substances that were "Generally Recognised as Safe (GRAS)". Special text books and pharmacy handbooks were also consulted, particularly on "the pesky matter of drug — nutrient interaction".

The book is divided into two parts. Part one is an interesting introduction entitled "It's Time for Supplement Safety" which covers the benefits and limitations of supplements and their use and abuse.

What can supplements do?

Hausman defends the use of supplements as they can make up for shortcomings in the diet. She is convinced that an inadequate diet plus a safe supplement programme, is certainly better than an inadequate diet alone. Supplements can make good health simpler to achieve, since instead of spending hours planning meals or eating foods that you dislike, you can obtain some of the nutrients you need from supplements. Though some decry this as the easy way out, the author feels that there is nothing wrong with the easy way out — as long as it is safe and effective.

Supplements — use or abuse?

The book identifies supplement abuse as a real and growing problem and most of its victims as being health conscious people who meant well but carried a good thing too far. The author has extensively researched cases of supplement abuse. The gripping case reports keep the pace of the book relatively fast for a book on this subject. These stories add a gossipy, light touch and could be valuable to dietitians trying to convince supplement abusers and pushers about the dangers of overdose.

The author likens supplement use to fire — "Use fire well and it will work for you, keeping you warm and allowing you to cook the foods that keep you healthy and well. But abuse it, it can work against you harming your precious possessions, your loved ones and your health."

What supplements cannot do

In this section the author emphasises that supplements are not magic drugs to cure all ailments, neither can they compensate for a diet containing too few calories.

Hausman is quick to quote the results of the recent FDA and Gallop poll report that 40% of all Americans and 60% of all American dietitians take supplements regularly. In other words, the very professionals who advocate the use of natural foods to meet nutrient needs are more likely to consume supplements than the general public.

The university-educated author was always under pressure to scorn supplements, decry their use and equate it to food faddism during the time spent at study and at work. What really changed her mind on this issue was her career as an author of several nutrition books. In "Jack Spratt's Legacy" she wrote about the compelling health benefits to be had from reducing fat intake. However, while working on her next book "The Calcium Bible" she discovered that foods richest in calcium are also high in fat and hence she advocated the use of supplements over the use of high fat, high calcium foods, simply because they were safer and the low fat, high calcium foods are not liked by everyone.

Research on the "At-a-glance Nutrition Counter" convinced Hausman of the fact that much of the nutrients in food can be lost on the way from the farm to the table. She felt it was much more practical to take a dose of Vitamin C than to be limited in how you eat your oranges or cook your broccoli.

Further, Hausman feels that progress in nutritional science has made meal planning very complicated, with so many nutrients to be accounted for. Several high risk groups like pregnant women, those on slimming diets and the elderly may be unable to obtain their Recommended Daily Allowance from food alone.

Unwilling to play the role of nutritional dictator, Ms Hausman feels that the attitude of nutritionists and dietitians on meeting your nutritional needs from food alone is far too rigid. Supplements are an alternate choice, a way of exercising options, and if an individual chooses supplements, that is fine, as long as it is safe.

Supplement safety

Hausman defines supplement safety as that level which has not been reported in the medical journals as hazardous to a healthy adult. Safety therefore refers to what is known at present as it is impossible to predict what tomorrow's research will reveal. The search for facts on supplement safety has been hindered by the fact that overdoses of vitamins and minerals are not reported illnesses. Having studied all reported cases of supplement overdose reported in the past 20 years, Hausman has come up with standards that are "guaranteed" safe.

In the second part of the book one chapter is devoted to each known vitamin and mineral. The introductory section consists of a review of recent literature on the nutrient, its chemical properties and metabolism. Short tables highlighting important information capture the reader's attention. Several quizzes, for self-examination, are designed to estimate an individual's need for a particular supplement — highlighting those lifestyles, eating patterns or illnesses that increase a person's need. Recommended Daily Allowances for the nutrient are also incorporated.

The main attraction of the book is an evaluation of each nutrient on a "Star System" that deals with the five key issues of supplement safety — side effects, acute ailments, long term problems, conflicting combinations and hidden consequences. Another original concept is the "Diet Detective" that scores a person's intake of a nutrient by giving points to a measured quantity of a food item. The score for each food item is derived by dividing the percentage of the USRDA listed on the label by ten. The average score of taking the test on three days is used to evaluate the proportion of the USRDA the individual is consuming through food alone so that the rest may be derived from the supplement. The Diet Detective offers a simplified method of estimating nutrient intake but is rendered inadequate by its brevity and cannot therefore be a true picture of an individual's nutrient profile.

Hausman uses the single-value USRDA as a guide to limit a person's total intake of a nutrient as it offers simplicity, but she acknowledges that the detailed RDA is a more precise estimate of an individual's need as it considers variations based on age and sex.

Drawing each chapter to its close is a section entitled "Cooking for the Nutrient". This includes kitchen-tested recipes using foods high in a particular nutrient. Each recipe provides two to four servings and promotes the use of wholemeal products, low fat foods and cooking methods. A breakdown of the caloric and nutrient content of one serving and a list of the best food sources of a nutrient serves to encourage readers to use food for nutrients. Information on drug-nutrient interaction is presented in a crisp and simple fashion. The American Pharmaceutical Association's Handbook on non-prescription drugs, is the source of the brand-by-brand comparison of nutritional supplements included at the end of each chapter.

Hausman, while aiming to teach readers to calculate personal supplement requirement within a safe limit, always recommends their use under medical supervision.

This guide has such chatty, captivating writing style that it is one book on the subject of nutrients that will not bore the reader. Hausman has conveyed medical and technical information in simple but clear fashion and it is excellent material for those dietitians having to answer patient's queries on the subject.

In the final analysis, however, the guide places much responsibility on the reader, who has to work out both his own dietary intake of 40 or more nutrients and then the level of supplement that may be taken safely. By comparison, meal planning for all its limitations is much less tedious than this unending calculation. Moreover, dietary habits keep on changing and the supplement user will have to keep on adjusting his supplement dose. No medical professional will be able to endorse such an individualized supplementation programme and provide continuous follow-up.

Anna Jacob graduated from the Women's Christian College, Madras, India, with a B.Sc. in Nutrition and Dietetics and an M.Sc in Food Service Management. She is presently Dietitian at The American Hospital of Singapore, and is also engaged in private consultancy work.

SUBSCRIPTION FORM

(THE JOURNAL IS DISTRIBUTED FREE TO ALL MEMBERS)

To: The Editor, The Singapore Dietitian, Singapore Dietitians' Association, Tanglin P.O. Box 180, Singapore 9124, Republic of Singapore.

Please enter my name for a one-year subscription (2 issues) of THE SINGAPORE DIETITIAN from Vol..... No....., for which I enclose a cheque/cash/ money order for S$8 (US$8 for overseas subscriptions), inclusive of postage, made payable to: "Singapore Dietitians' Association".

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CALENDAR OF EVENTS

Cholesterol Education Programme at Toa Payoh Polyclinic

Beginning on Friday 31st March, 1989, the Singapore Dietitians' Association will conduct a course entitled "The Cholesterol Education Programme". The course, to be held at Toa Payoh Polyclinic's Health Promotion Centre, will run for 5 consecutive Fridays ending on 28th April. Each session begins at 7.00pm and will last approximately 2 hours. A healthy tea will be provided at the end of each session.

The programme is open to members of the public who have a confirmed high blood cholesterol of greater than 240mg/dL. Spouses are also encouraged to attend. The objective of the programme is to lower the blood cholesterol of the participants by proper dietary modifications.

The sessions will comprise the following:

1. Introduction to the programme; diet-related risk factors of high blood cholesterol
2. Methods of reducing fat intake
3. Knowledge on the different types of fat and ways to replace saturated fat with polyunsaturated fat
4. Methods of reducing dietary cholesterol
5. The importance and function of fibre and methods on how to increase its consumption.

A 6th session on "Weight Control" will be optional.

The fee for the programme is $75 per person and $120 per couple. The 6th session will be an additional $10. SDA will allocate a portion of the fees collected to each of the participating dietitians as a professional fee.

The Cholesterol Education Programme has been planned by a Working Committee chaired by Evelyn Fong and comprising the following members: Miriam Young, Anna Jacob, Tan Wei Ling, Helen David, Yeong Boon Yee, Ho Fong, Susani Karta, Tan Shok Eng and Chai Kwok Hoey.

To date, 15 persons have registered for the March/April programme, and it is to be repeated in July. Depending on the public response, it is envisaged that this education programme will become an ongoing activity of the Association, and it is hoped that other members of the Association will come forward to participate.

Lunchtime talks for GPs

An invitation will be going out shortly to all full members to attend the first in a series of lunchtime talks which SDA is giving to general medical practitioners. The talks, organised by in conjunction with Nestle, are aimed at enhancing GPs' awareness of the role of dietitians as members of the community medicine team. Principles of the dietary treatment for specific disease conditions will be outlined and an idea given of the approach which dietitians take in counselling and following up their clients.

The first talk will be on Diabetes Mellitus, and is being presented by Mrs Thio Yee Fui, tentatively in April. Two more talks, on Renal Diets and Hyperlipidaemia, are scheduled for September and December.

MEETINGS

20-21 March 1989
SEAMEO-TROPMED 2nd Seminar on Nutrition
Jakarta, Indonesia

22 March 1989
International (ASEAN) Symposium on Breastfeeding
Jakarta, Indonesia

10 April 1989
Symposium on "Emerging Challenges for the Dietetic Profession"

This symposium, which includes dinner, is jointly organised by the Singapore Dietitians' Association and the Training and Health Education Department of the Ministry of Health as part of "Nutrition Week".

Venue: Marina Mandarin Hotel, Singapore
Time : 6.30pm — 10.00pm

For enquiries, please contact Miss Toh Hui Kheng, Tel. 4706683.

April 27-29 1989
American Dietetic Association Conference for Practice and Research
Orlando, Florida

April 29 1989
5th Annual General Meeting of the Singapore Dietitians' Association
Details will be circulated to members

May 12, 1989
Diabetes Update '89 : Putting Creativity Back into Nutritional Care American Dietetic Association
Chicago

20 — 25 August, 1989 14th International Congress of Nutrition
Seoul, Korea

Contact: The Secretariat,
c/o Department of Foods and Nutrition,
Ewha Women's University,
11-1 Daehyun-dong,
Suhdaemun-ku,
Seoul 120-750, Korea.

We are glad to announce that our member Mrs Lynn Alexander will be sponsored by Nestle Singapore to attend this conference.

CALENDAR OF EVENTS (cont'd)

"Nutrition Week" 1989

The Training and Health Education Department of the Ministry of Health will hold a Nutrition Week from 7-13th April, 1989, aimed at motivating Singaporeans to adopt dietary practices conducive to good health and general well-being. The plans for Nutrition Week follow from the recommendations of the "National Advisory Committee on Food and Nutrition" for the promotion of community awareness of the concepts of nutrition together with the translation of these concepts into desirable food habits.

To publicise the concepts, goals and guidelines formulated by the Advisory Committee, various activities have been planned for the week in addition to media publicity and coverage. Some of these activities are:

- an Inter-Junior College and Pre-University Centre Nutrition Quiz will begin on television. The finals will be telecast during Nutrition Week.
- a Seminar for Home Economics Teachers — 10 March
- a Workshop for Company Nurses — 17 and 18 March
- a Symposium for Dietitians — 10 April (see "Meetings")
- A Workshop for Childcare Supervisors — 12 April

To increase public awareness and participation, eating places have been approached to promote healthier menu options while retail stores have been requested to promote healthier food choices. A booklet, "Guidelines for a Healthy Diet", will be available on sale for health professionals.

Nutrition Week's activities should get all Singaporeans talking about food and health, which is the theme of the Week.

BOOKS

Winning Weight Loss for Teens
Joanne Ikeda, M.A., R.D., *Bull Publishing Co.*, 1987, *Softcover*, 112*pp*, US$7.95.

Winning Weight Loss for Teens is a sound, practical, guide to weight control for literate youth. The purpose of this guide is to help young persons gradually change their food and exercise habits and perception of food in order to lose fat and to keep it off. Ikeda has written a guide and workbook based on behavioural modification principles and on her work with obese youth over the last decade. Beginning with advice on how to contract a friend for support and to keep a food diary, the workbook proceeds to evaluating diets, setting goals, learning nutrition and weight control information, increasing aerobic activity and muscle tone, judging quick-loss regimens and rewarding success.

Several special features of the book include a letter to parents, progress checklists and self-quizzes for review. Ikeda also provides practical guidelines for encouraging family exercise and dietary change, as well as the caution to be alert to abusive weight-control practices.

Eating for Endurance
Ellen Coleman, M.A., M.P.H., R.D. *Bull Publishing Co.*, 1988, *Softcover*, 151*pp*, US$8.95.

A factual book to recommend to coaches and athletes or those who need to catch up quickly with sports nutrition. It covers the following topics — pre-event meals, an easy to follow discussion on metabolism, fuel usage, glycogen stores, hydration and caffeine. Controversial subjects, such as vitamin and mineral consumption, sugar, weight loss, faddism, and body composition are extensively discussed.

ABSTRACTS

CALORIC COMPENSATION IN NORMAL WEIGHT ADULTS *Mattes, R.D., Pierce, C.B., Freidman, M.I. The American Journal of Clinical Nutrition, Vol 48, p 214, 1988.*

The extent and time course of caloric compensation for surreptitious dilutions and supplements to the energy value of the diet were examined in ten adults. Lunches were provided containing approximately 66% more or less calories than customary for the midday meal for a two week period, interposed between one week baseline or recovery periods. Diet records were kept throughout the study. Total energy intakes did not differ among the three control periods (weeks 1, 4 and 7) or in between any of these periods and the period when subjects were provided with the low calorie meal. Total energy intake was significantly higher relative to all other periods when subjects injested the high calorie meal. To the extent that compensation occurred it was apparent immediately and did not appear to change over the two week study periods. Results suggest that human beings compensate more readily for decreases than for increases in caloric intake.

DEFFECT OF "EXTRA" VEGETABLES ADDED TO A STARCHY MEAL ON BLOOD GLUCOSE RESPONSES IN PATIENTS WITH TYPE 2 DIABETES *Wolever, T.M.S., Jenkins, A.L., Vuksan, V., Wong, G., Josse, R., and Jenkins, D. Journal of the Canadian Dietetic Association, Vol 49, p 168, 1988.*

This study tested the hypothesis that the addition of extra vegetables to a starchy meal has no effect on the acute blood glucose response. Eight subjects with non insulin dependent diabetes mellitus (NIDDM) were given different test meals in the morning after overnight fast on four separate occasions. The meals consisted of a 50g carbohydrate portion of rice alone, or the same amount of rice plus one cup of lettuce, broccoli, or Brussels sprouts. The blood glucose response to rice was not significantly altered by the addition of any of the three vegetables.

IN BRIEF

A few Brazil nuts a day may keep cancer away

Selenium, which has been shown to prevent several types of cancer, is readily bioavailable from Brazil nuts, according to research conducted at Cornell University's Toxic Chemicals Laboratory. Selenium blood levels rose to two to three times their normal levels almost immediately on consuming 4-6 Brazil nuts a day for 18-27 days, in four voluntary subjects.

Selenium is both an essential and a toxic element, depending on its concentration in the diet. A level of 0.1 to 0.2 ppm in the diet is generally considered adequate for human beings. Less than 0.05 ppm selenium in the diet is considered deficient. Five ppm or more of selenium in the human diet is toxic and can cause liver damage.

People with selenium deficiency could eat a few Brazil nuts a day — under the care of a physician — to build up their levels of selenium, and unless one gorges on Brazil nuts a normal diet is not likely to supply too much.

Brazil nuts contain up to 250 ppm of selenium and 6000 ppm of barium. Barium is not known to be an essential element for plants and animals and is not as toxic as selenium.

Donald Lisk, professor of toxicology, says that the protective effect of selenium can be shown only in cases when it is fed concurrently with the carcinogen. That behoves us to keep selenium levels up, to get protection throughout lifetime.

Source: Journal of the American Dietetic Association, Vol 88 (11) p 1440, 1988.

Feel cold? Iron out the goose bumps!

If your body can't stand up to the cold, you may not have enough of the right stuff — iron — even if you are not anaemic. According to Henry C Lukaski, a physiologist with the Agricultural Research Service in Grand Forks, ND, a recent study of women indicates that the ability to regulate or maintain body temperature in the cold may depend on the amount of iron consumed daily.

Changes in metabolism occur before clinical signs of anaemia or iron deficiency present themselves. The metabolic changes are related to stored iron, measured by blood levels of the iron storage protein ferritin, rather than to blood haemoglobin concentration.

A study on six healthy women showed that they lost 29% more body heat after a low-iron feeding period than after the supplementation period. They felt colder during the low-iron period.

As more than half of American women in the 11-50 year age group consume less than the recommended iron intake, impaired thermoregulation in cool and cold temperatures may be quite prevalent.

Source: Journal of the American Dietetic Association, Vol 88 (12), 1988.

Consensus on the prevention and treatment of kidney stones

A Consensus Development Conference, held in March 1988, has resulted in a report from a panel which highlights methods of prevention and treatment of kidney stones, including clinical and laboratory approaches and directions for future research.

The non-specific treatment used in all patients with kidney stones is increased fluid intake. Strict guidelines are not available, but doubling urinary output or a 24-hour urinary output of greater than 2 litres is recommended. Benefits of hydration can be seen with a much smaller increase in urinary volume.

Specific treatment for idiopathic calcium oxalate stones is directed toward mechanisms that will reduce abnormal urinary metabolite excretion. Patients are advised against both a calcium intake of greater than 1g/ day and a high sodium intake. Reduction of dietary purine is also widely recommended.

Source: Office of Medical Applications and Research, National Institutes of Health, The Journal of the American Medical Association, Vol 260, p 977, 1988.

ABSTRACTS

NUTRITIONAL MISCONCEPTIONS AND MISNOMERS *Moore, T. Journal of the Royal Society of Health, Vol 108, p 146, 1988.*

Three points of semantic difficulty are discussed: calorie/ joule, saturated fat and dietary fibre. A plea is made to nutritionists for official retention of the calorie, on the grounds of its simplicity of conception and historical antiquity. As homage to internationalism, prominence should be given to the numerical relationship: 1 kcal = 4.184 joules. Nevertheless, it must be emphasised that in nutrition there is no fixed relationship between joules of work done and overall calories of food expended. (It is both theoretically and practically impossible to produce motion energy without also producing heat). Better terminology is needed for "saturated" fat; it might be correctly, if not concisely, described as "fat rich in saturated fatty acids"; some offical subgrouping of the fats according to their degree of saturation is needed. The food fraction currently called "dietary fibre" shold be renamed "vegetable fibre" with its nutritional limitation and virtues fully recognized.

MINERAL RETENTION IN YOUNG MEN CONSUMING SOY-FIBRE-AUGMENTED LIQUID-FORMULA DIETS *Taper, L.J., Milam, R.S., McCallister, M.S., Bowen,P.E., and Thye,F.W. American Journal of Clinical Nutrition, Vol 48, p 305, 1988.*

Addition of soy polysaccharide to commercially available liquid formulae has been proposed to regulate bowel function in patients receiving these nutritional products as the sole dietary intake. The desirability of such a formula is related in part to its mineral nutriture. Addition of 20g soy polysaccharide improved retention of copper, iron, zinc and magnesium over the diet without added fibre. The highest level of soy polysaccharide (40g per day) resulted in significantly lower retentions of the same. It therefore appears that mineral retentions are not seriously affected by the soy polysaccharide fibre in amounts equal to or less than 30g/day.

Singapore Dietitians' Association

APPLICATION FOR MEMBERSHIP

Application forms are available from the Honorary Secretary, Singapore Dietitians' Association, Tanglin P.O. Box, Singapore 9124.

MEMBERSHIP

Full members must hold a Degree or Diploma in Dietetics. Please assist us in processing your application by submitting the following:-

1. A copy of Degree/Diploma
2. Course syllabus and description
3. Transcripts
4. Verification statement from other dietetic associations.

Affiliate members shall be:-

1. Any person holding a recognised scientific qualification in nutrition.
2. Any interested person who, in the opinion of the Committee, occupies a position in a field allied to the profession of dietetics.
3. Any person or corporate body interested in the promotion or advancement of dietetics, or any branch thereof.

No person who is eligible for full membership shall be entitled to affiliate membership.

SUBSCRIPTION (fiscal year being June-May)

All full members shall be required to pay an annual subscription of $60.00. Full members joining part of the way into the year may pay a pro-rated subscription, this being calculated from the beginning of the month after membership is confirmed.

Affiliate members shall be required to pay $20.00 per annum. Affiliate members joining part of the way into the year (Dec-May) may pay $10.00.