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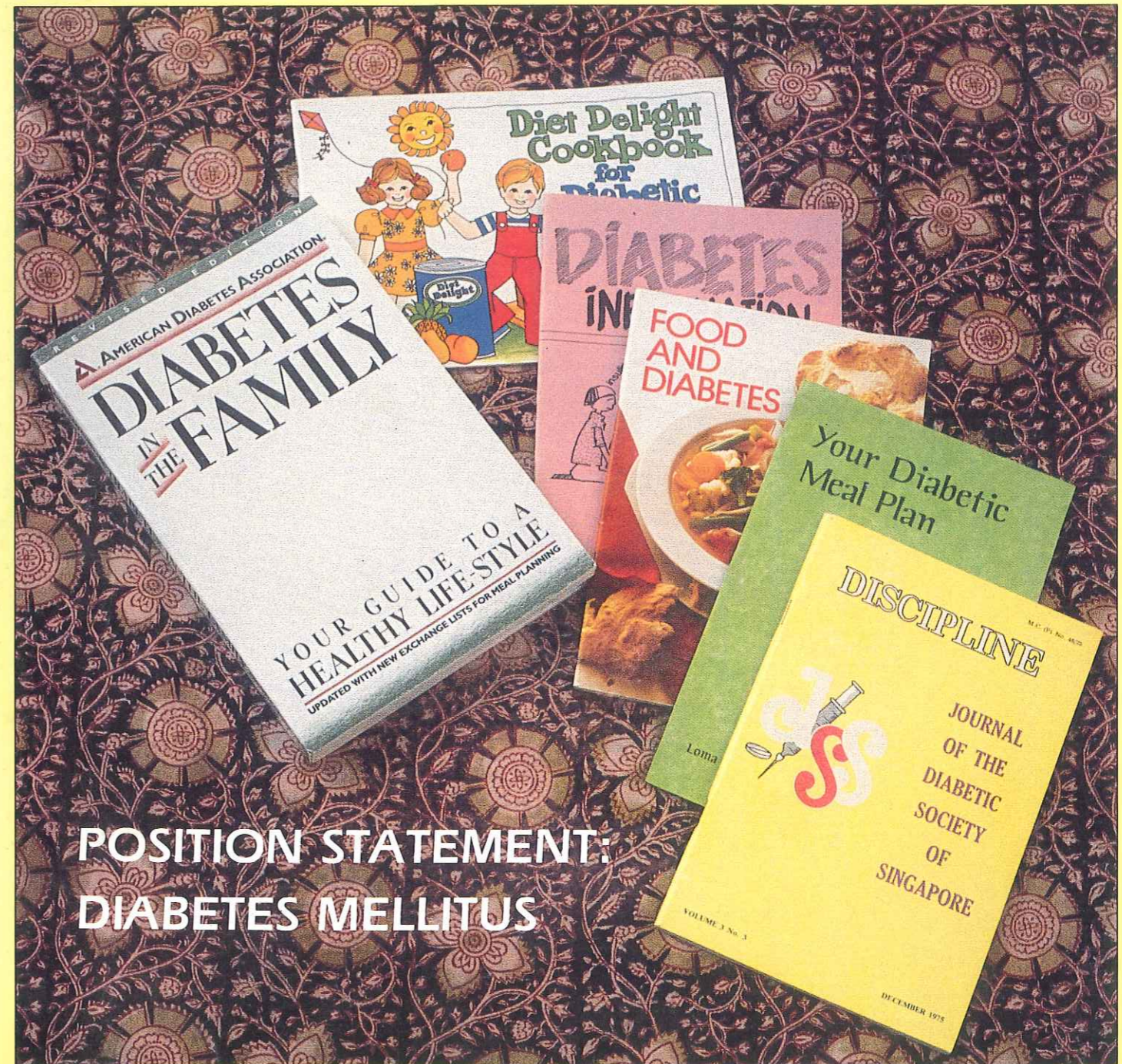


Singapore Dietitians' Association

## The Singapore Dietitian

Official Publication of the Singapore Dietitians' Association

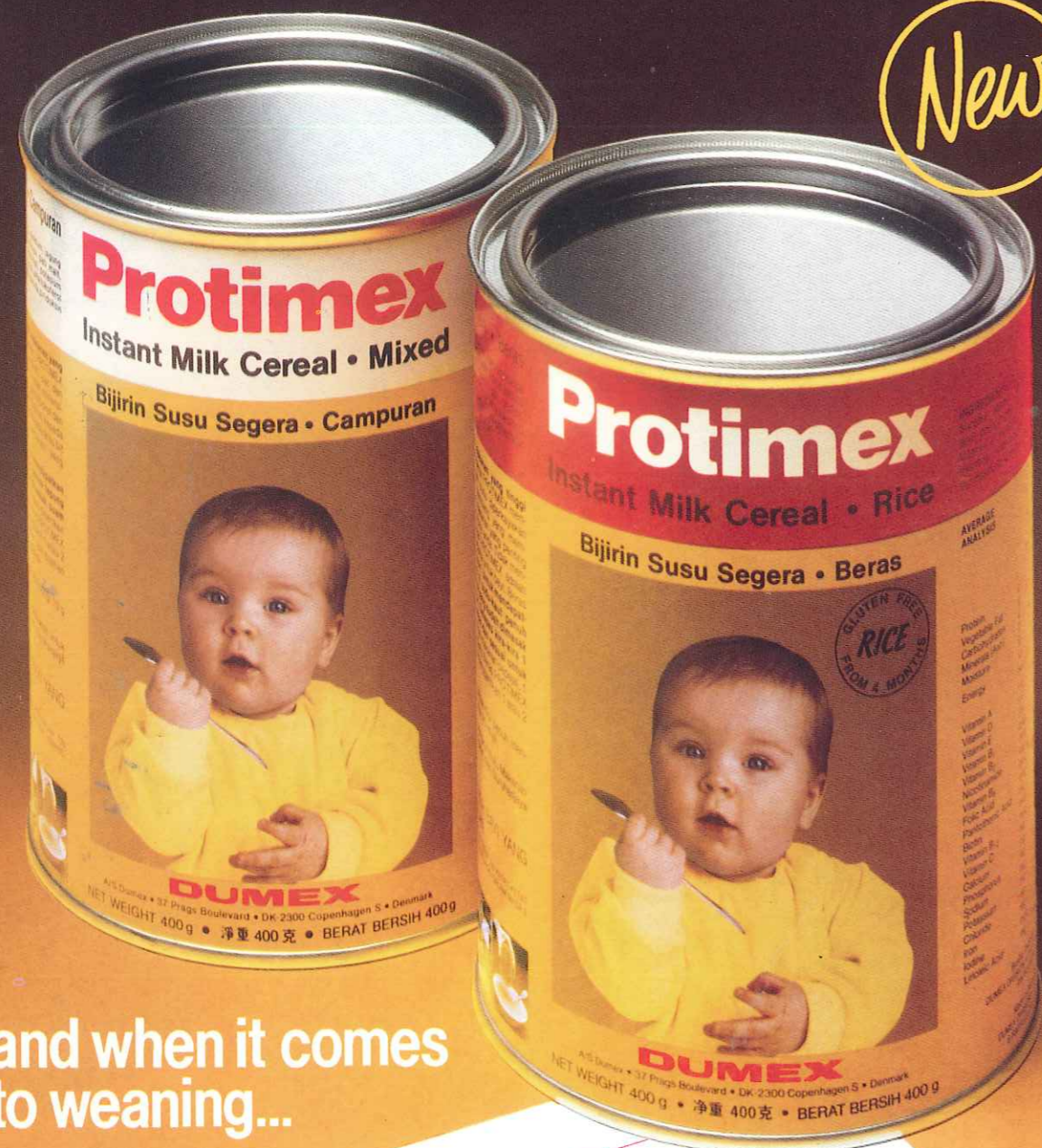
VOL. 3 No. 3 September 1988



POSITION STATEMENT:  
DIABETES MELLITUS

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From the President. . . . .



It is a distinct challenge and honour to be the new elected President of Singapore Dietitians' Association. I would like to express the Association's sincere appreciation and recognition to the past committee members who have been responsible for the implementation of the previous year's activities. Our very special thanks to Mrs Helen David, the past President, for her leadership and for giving us direction in the continuity and progress of our professional Association.

The progress of the Singapore Dietitians' Association is dependent on the many volunteers and elected committee members who continuously support our programmes and activities. Collectively, the current committee and subcommittee members represent a wide range of interests and involvement over the years in Association activities. It has been a privilege to work with most of them in some capacity over the years of my involvement with the Singapore Dietitians' Association.

I believe they have skill, energy, integrity, a positive attitude and a good sense of perspective. Together we have the vision to plan for the future, the wisdom to make decisions which are best for the profession and the courage to back up these decisions with action. No association stands or falls on the basis of one individual, even its President. The leadership of any organization is only as strong as the partnership of leaders at its helm. What it will take to lead the Singapore Dietitians' Association successfully will be nothing less than our professional best. If you, the members, give us your trust, confidence and support, that is what we will provide. I hope upon the completion of my term as your President, I can look back and be proud of the contribution made to this Association and to the profession of dietetics.

I am confident that we can meet the challenge in our profession which so clearly lies ahead. The challenge for growth and recognition is a joint responsibility of each professional dietitian working with the Association. We must continue to assertively demonstrate our expertise in nutritional care, in food service management and in community dietetics on an individual basis in our positions. We are limited only by ourselves. The decision is ours.

Ms Susani K. Karta, M. Sc., R. D.  
President  
Singapore Dietitians' Association

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## POSITION STATEMENT:

# Dietary Recommendations for Individuals with Diabetes Mellitus\*

## INTRODUCTION

Diet is essential to the management of diabetes. Over recent years much new information has been generated in the field of nutrition for diabetes management. The Singapore Dietitians' Association (SDA) recognises the need to standardise dietary education for diabetes in Singapore. A position paper sub-committee of SDA was formed in 1987 and was asked to prepare a position statement on "Dietary Recommendations for Individuals with Diabetes Mellitus".

The purpose of this position statement is to update the principles and recommendations for the nutritional management of diabetes mellitus and to provide guidelines for dietitians and other health care professionals in practice. The recommendations are based on current knowledge and are in line with those of major diabetes associations throughout the world. Revision will be carried out from time to time as new information in this area of nutrition becomes available.

## GOALS FOR DIETARY MANAGEMENT

- To provide general adequate nutrition for health and well-being.
- To control blood glucose levels so as to prevent hyperglycaemia, hypoglycaemia and complications of diabetes mellitus.
- To achieve normal growth in children and adolescents.
- To achieve and maintain desirable body weight.
- To individualise each meal plan.

## RECOMMENDATIONS (for adults)

**General good nutrition.** A variety of foods should be eaten, including some foods from each basic food group daily.

**Energy requirements.** The energy level for the diabetic diet should be at a level to achieve and maintain desirable body weight. Tables to determine frame size and body weights for adults are appended (Appendices 1 and 2). As energy requirements vary with age, height and weight; it is recommended that the Harris-

Benedict equations be used to determine energy requirements. These formulae take into consideration the individual's sex, age, height and weight to determine Basal Energy Expenditure (BEE). Daily energy requirements are determined by multiplying the BEE by an activity factor. The Harris-Benedict equations are as follows:

$$\text{Females: BEE (kcal)} = 655.10 + 9.56(W) + 1.85(H) - 4.68(A)$$

$$\text{Males: BEE (kcal)} = 66.47 + 13.75(W) + 5.0(H) - 6.76(A)$$

where W = actual weight in kg, H = height in cm and A = age in years.

Total daily energy requirements can be estimated by using the following formula:

$$\text{Maintenance kcal required} = \text{BEE} \times \text{activity factor}^1$$

Note that in conditions of stress, for example, post-operation, cancer or infections, incorporation of a stress factor in the above formula enables estimation of the raised energy requirements (see Appendix 3).

The use of the Harris-Benedict equations provides only a general guide to estimating energy requirement. The equations are not designed for use in children.

**Percentages of energy from carbohydrate, protein and fat.** The following ranges are recommended:

Protein	15 - 20%
Carbohydrate	50 - 60%
Fat	25 - 30%

**Protein.** It is recommended that a variety of protein sources be included in the diet, from plant as well as animal foods. The protein content of the diet may need to be reduced or increased in certain circumstances such as renal disease and pregnancy.

**Carbohydrate.** Foods containing unrefined carbohydrate should be emphasized, and highly refined carbohydrate foods, which are low in fibre, should be minimized. Small amounts of sucrose and other refined sugars may be acceptable for some individuals depending on the effects on blood glucose and lipids.

Soluble dietary fibre, such as from legumes and roots, is especially beneficial in diabetes management as it helps improve carbohydrate metabolism and lower total cholesterol as well as low density lipoprotein (LDL) cholesterol. Thus, it is recommended that dietary fibre consumption be increased to 30-35g per day. It is pre-

<sup>1</sup>The activity factors are:

In bed	1.2
Out of bed	1.3

ferable that the fibre comes from foods, and not from fibre supplements.

Regarding the use of glycaemic index for dietary management, more research is needed; individual glycaemic indexing may, however, be used as a method of control for individuals.

**Fat.** The polyunsaturated to saturated fat (P : S) ratio should be at least 1 : 1, with saturated fat providing no more than 10% of total energy, and polyunsaturated fat providing at least another 10%. More research is needed to confirm the possible benefits of eicosapentanoic acid (EPA) and monounsaturated fat.

**Cholesterol.** Intake should be no more than 300mg daily.

**Vitamins/minerals.** These should meet the requirements for health as recommended by the Ministry of Health (see resource reference 18).

For healthy individuals on a normal energy intake, requirements can be met from a balanced and varied diet. However, those on very low energy diets, or in certain other special circumstances, may require supplements.

**Sodium.** Since diabetic individuals are prone to hypertension, and hypertension has been linked with a high sodium intake, diabetic individuals should be cautioned against a high intake of salty food, including many preserved and processed foods. A stricter control of sodium intake is dealt with under the section "Special Groups".

**Alcohol.** Due to its energy content, alcohol is not recommended for overweight diabetic individuals. For others, moderation is necessary and as such, it may be considered acceptable as an occasional extra. Effects of alcohol on glycaemic control and blood lipids must be considered and the diabetic individual made aware of possible detrimental effects of alcohol to his health. Those with diabetes should consume alcohol only with their doctor's permission due to possible reactions between alcohol and oral hypoglycaemic agents as well as other drugs they may be taking.

**Alternative sweeteners.** The use of various nutritive and non-nutritive sweeteners is acceptable in the management of diabetes, but moderation is advisable. Non-nutritive sweeteners are preferable as they will not contribute to weight gain.

**Diabetic products.** As content of products is variable, label-reading is necessary to evaluate the products regarding carbohydrate and energy content. The nutritional needs of the diabetic individual can be met without recourse to such products.

## METHODS TO ACHIEVE GOALS

**Team approach.** A team approach to education is recommended. The educational team should consist of a physician, a dietitian, a nurse educator, and other members of the health care team.

The individualisation of the meal plan, education and counselling programme should be as realistic and flexible as possible.

**The first phase.** In the initial phase after diagnosis, a simplified and individualised meal plan should be taught and the basics in diabetes management introduced. Two or three counselling sessions may be necessary to complete this phase.

**Continuing phase.** During the continuing or long term period of a diabetic individual's treatment he should learn to make decisions with regard to appropriate dietary changes.

The recommended frequency for follow-up visits to the dietitian is: adults - every 6 months to one year; children and adolescents - every 3-6 months; pregnant diabetics - monthly. Individuals requiring weight control may need more frequent visits.

**Teaching a balanced meal plan.** It is recommended that the concept of a balanced diet be used in teaching the diabetic diet. Instruction should be given on the contribution to the diet of the following types of food:

- starchy foods (cereals, pulses)
- meat/meat substitutes
- milk/milk substitutes
- fruits
- vegetables
- fat

Exchange lists (currently based on the British or American systems) may be used as a tool by the dietitian in formulating the individual's diet. The extent of use of exchange lists will vary according to the individual's age and educational background.

Bearing in mind the different traditional, ethnic and cultural backgrounds of Singaporeans, dietary instruction must be individualised. 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.

## Assessing diabetic control

**HbA1C (glycosylated haemoglobin).** This test should be performed every three months to assess past diabetic control.

**Blood glucose monitoring.** Although regular blood glucose monitoring is ideal, it may not always be feasible. Frequency of blood glucose monitoring should be based on the stability of the diabetes and the physician's recommendation.

**Urine testing.** When blood glucose self-monitoring is not possible, urine testing for both glucose and ketones is acceptable. It should not, however, be relied on solely as an indicator of blood glucose level, as individuals differ in renal threshold for glucose.

During periods of illness blood glucose monitoring and urine testing for ketones is essential.

**Exercise.** Exercise is beneficial in controlling blood glucose and lipid levels as well as for weight maintenance. Thus, regular exercise should be encouraged. Three to five sessions per week of aerobic exercises, for a duration of 15 - 60 minutes each session is recommended. Anyone who has not previously been on an exercise programme should seek their physician's approval before beginning.

**Recognition of symptoms of hypoglycaemia/hyperglycaemia.** Individuals with diabetes should be taught to distinguish between the symptoms of hypoglycaemia and hyperglycaemia and the consequences of the Smogyi effect. In addition, appropriate management for each of these conditions should be taught.

## SPECIAL CONSIDERATIONS

### Insulin Dependent Diabetes Mellitus (IDDM)

**Meal plan.** Total daily food intake should be distributed consistently throughout the day, in particular, carbohydrate intake. Each day's meal plan should be

\*Prepared by the Position Paper Sub-committee of the Singapore Dietitians' Association comprising the following members: Susani K. Karta, M.Sc., R.D., (Chairperson); Lynn Alexander, B.Sc. (Hons), S.R.D., Chai Kwok Hoey, B.Sc.; Helen David, Dip. Diet., S.R.D.; Nancy Evans, B.Sc., P.Dt.; Tai Yee Fui, B.Sc., S.R.D.; Tan Wei Ling, B.H.Sc., Dip Ed., Acad. Postg. Dip. Nutr., S.R.D.

consistent, with at least three regular meals, a bedtime snack and one or more between-meal snacks. Timing and amount of food will depend on type of insulin, physical activity, lifestyle and results of blood glucose monitoring. Greater flexibility in meals may be allowed by adjustment of insulin dosage at the discretion of the physician and dietitian.

**Exercise.** To avoid hypoglycaemia during or after vigorous or prolonged exercise, supplemental carbohydrate-containing snacks may be required before and during exercise. Extra carbohydrate may be needed for up to 24 hours after the exercise to allow repletion of glycogen stores in muscles and liver and prevent post-exercise hypoglycaemia. Blood glucose monitoring before, during and after exercise will enable estimation of additional requirements.

**Diet during illness.** Usual insulin dose must be taken, and if the regular diet cannot be eaten, a fluid diet containing the equivalent amount of carbohydrate should be taken, spread out in small frequent feeds throughout the day.

### Non-Insulin Dependent Diabetes Mellitus (NIDDM)

**Meal plan.** As with IDDM, food should be distributed throughout the day in five to six feedings, and the meal plan should be consistent from day to day. For those on oral hypoglycaemic therapy, carbohydrate intake, in particular, should be regulated.

**Obesity<sup>1</sup>.** Moderate energy restriction of 500-1000 kcal below usual daily energy intake is recommended. Only in severely obese individuals where there is a need for rapid weight loss should very low energy diets (500-800 kcal/day) be considered, and such diets should always be under strict professional supervision, with provision of vitamin and mineral supplements to meet the Recommended Daily Allowances.

Exercise may be a useful adjunct to a low energy diet, but carbohydrate intake should be high enough to maintain muscle glycogen stores.

Following weight loss, a maintenance programme should be provided.

**Exercise.** Supplemental food before and during exercise is not required, with three possible exceptions:

- In severe, prolonged exercise such as endurance sports.
- In those taking sulphonylureas.
- In those taking insulin.

In these cases the need for supplementation will be determined by blood glucose monitoring.

### SPECIAL GROUPS

**Children and adolescents.** Growth should be monitored in children with diabetes as poor control can retard growth. For children and adolescents the Recommended Daily Dietary Allowances table provides a guide to approximate energy requirements. The levels of fibre, cholesterol and sodium recommended for adults may need to be adjusted for children.

<sup>1</sup> For certain individuals it may be more appropriate to assess degree of obesity by measurement of Body Mass Index (BMI), rather than weight for height.

**Pregnant diabetic individuals.** In IDDM diabetes, attainment of normal or near normal blood glucose prior to conception minimizes the chance of foetal anomalies occurring during the first trimester. In gestational diabetes a suitable meal plan should be followed as soon as possible after diagnosis.

Energy and nutrient requirements are as for pregnant non-diabetic individuals. A minimum of 200g carbohydrate per day is essential. However, the ideal is as for the non-pregnant diabetic individual, i.e. a minimum of 50% of energy from carbohydrate. Meticulous control of blood glucose is necessary. Quickly digested sources of simple sugars such as from fruit and milk should be included only in the amount needed for nutritional adequacy, distributed over the day in combination with foods containing complex carbohydrate.

At least 5-6 meals and snacks distributed through the day are recommended to prevent pre-prandial ketosis. A substantial bedtime snack of at least 25g carbohydrate and some protein is recommended, especially for the insulin-treated woman, so that early morning hypoglycaemia is avoided.

Saccharine and cyclamates should be avoided during pregnancy, but moderate use of aspartame is not contraindicated.

Oral hypoglycaemic agents should not be taken in pregnancy or while breastfeeding.

In lactation, non-insulin dependent diabetes poses no problems, but the insulin-dependent breastfeeding mother should take a carbohydrate-containing snack before nursing to prevent hypoglycaemia.

**Hypertensive individuals.** Moderate sodium restriction to approximately 2g sodium per day may lower blood pressure.

**Individuals with renal failure.** Protein restriction may stabilize the progression of renal failure in diabetic individuals, but the long-term impact of increased carbohydrate to replace the decreased protein needs to be evaluated.

### SUMMARY

Dietary consideration is essential to the management of diabetes. Planning of diabetic diets must be highly individualized, particularly so in Singapore's multi-ethnic population. As such, the handing out of pre-printed diet plans is strongly discouraged. Education of diabetic individuals must be a continuing process, and a team approach is preferred with the dietitian responsible for nutrition planning.

Basic essential nutrient needs for diabetic individuals are the same as for those without diabetes. Energy intake should be appropriate for achieving and maintaining body weight. While carbohydrate intake must be controlled, it should not be unduly restricted. Wherever possible unrefined carbohydrate foods, particularly those containing soluble fibre, should replace refined carbohydrate in the diet. Total fat should be restricted and saturated fat replaced with polyunsaturated fat to slow the progression of atherosclerosis.

The nutritional needs of a diabetic individual can be met without the use of special diabetic or dietetic foods. The use of alternative sweeteners is acceptable but not encouraged.

The recommendations are based on current knowledge and will be updated periodically as new information in the area of nutrition emerges.

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## APPENDIX 1

### ELBOW BREADTH METHOD FOR ESTIMATION OF FRAME SIZE

To determine frame size:

- Extend arm and bend forearm at a 90 degree angle.
- Keep fingers straight and turn the inside of wrist towards the body.
- Place the thumb and index finger of other hand on the two most prominent bones at the elbow.
- Use fingers to measure the distance between these two bones.
- Measure the space between the fingers against a ruler or tape measure.
- Compare it with the table below.

Table of elbow breadths.

Height (cm)	Elbow breadth (cm)		
	Men		
	small frame	medium frame	large frame
150-159	Below 6.3	6.3 - 7.3	Above 7.3
160-169	Below 6.7	6.7 - 7.3	Above 7.3
170-179	Below 7.0	7.0 - 7.6	Above 7.6
180-189	Below 7.0	7.0 - 7.6	Above 7.6
190-199	Below 7.3	7.3 - 8.3	Above 8.3
	Women		
	small frame	medium frame	large frame
140-149	Below 5.7	5.7 - 6.3	Above 6.3
150-159	Below 5.7	5.7 - 6.3	Above 6.3
160-169	Below 6.0	6.0 - 6.7	Above 6.7
170-179	Below 6.0	6.0 - 6.7	Above 6.7
180-189	Below 6.3	6.3 - 7.0	Above 7.0

Source: Training and Health Education Department, Ministry of Health, Singapore

APPENDIX 2

TABLE OF DESIRABLE BODY WEIGHTS

Height (cm) without shoes	Weight (kg) (In light clothing)					
	Men			Women		
	small frame	medium frame	large frame	small frame	medium frame	large frame
145				46-50	49-55	53-59
147				46-51	50-56	54-61
150				47-52	51-57	55-62
152				48-53	52-58	56-63
155	57-60	58-63	61-67	49-55	53-60	58-65
157	58-61	59-64	62-68	50-56	55-61	59-66
160	59-61	60-65	63-70	51-57	56-62	61-68
163	60-62	61-66	64-71	53-59	57-64	62-70
165	61-63	62-67	65-73	54-60	59-65	63-72
168	61-65	63-69	66-75	56-61	60-66	65-74
170	62-66	65-70	68-77	57-63	61-68	66-76
173	63-67	66-71	69-79	58-64	63-69	67-77
175	64-69	67-73	71-81	60-66	64-71	69-78
178	65-70	69-74	72-82	61-67	66-72	70-80
180	66-71	70-76	73-84	62-68	67-73	71-81
183	68-73	71-78	75-86			
185	69-75	73-80	77-88			
188	71-77	75-81	79-91			
190	72-79	76-84	81-93			

Source: Training and Health Education Department, Ministry of Health, Hyderabad Road, Singapore 0511 (compiled from US Metropolitan Life Insurance Company Table of Desirable Body Weights, 1983).

APPENDIX 3

FORMULA FOR CALCULATING DAILY ENERGY REQUIREMENTS OF STRESSED PATIENTS

Maintenance kcals = BEE x activity factor x stress factor

Table of stress factors

Disease Process	Stress Factor
Simple postoperative course	1.05
Cancer	1.1 - 1.45
Peritonitis	1.05 - 1.25
Long bone fracture	1.15 - 1.30
Severe infection/multiple trauma	1.30 - 1.55
Burns (10-30% of body surface area)	1.50
Burns (30-50% of body surface area)	1.75
Burns (> 50% of body surface area)	2.00

# Spécial Diabetic Diet Products

Nancy Evans, B.Sc., P.Dt and Thio Yee Fui, B.Sc., SRD

Beginning with the discovery of saccharin in 1879, it has become possible for individuals with diabetes to enjoy a sweet taste without taking sugar. Since then several sugar substitutes and artificial sweeteners have been identified, and with these came the development of special diabetic products. But are these really suitable for people with diabetes? To answer this question, we have examined the various sugar substitutes, artificial sweeteners and diabetic products available in Singapore.

### Sugar substitutes and artificial sweeteners

Sugar substitutes in granulated or powder form (in packets or boxes) contain a small amount of both sugar and calories. As such they are termed nutritive, as opposed to the non-nutritive artificial sweeteners in liquid or tablet form, which contain no sugar and calories.

### Artificial sweeteners

**Saccharin**, the grand-old lady of artificial sweeteners, is 300 times sweeter than sucrose. **Cyclamates** are not as powerful as saccharin, being only 30-50 times as sweet as sucrose. Since both saccharin and cyclamates are non-nutritive they supply no calories to the food products they sweeten. However, there is much controversy over the safety of these two sweeteners. Studies have shown that rats fed large quantities of these substances developed cancer. As a result, U.S. and Canada have banned the use of cyclamates and saccharin respectively as table-top sweeteners. The role that either saccharin or cyclamates play in causing cancer in man has not been established. Some studies show no difference in the incidence of cancer between saccharin users and non-users. Saccharin and cyclamates can be used in cooking but may produce a bitter after-taste. They are most commonly used for sweetening drinks.

### Sugar substitutes

**Fructose** or "fruit sugar", around 1.5 times as sweet as sugar, provides 4 calories per gram, just like sugar. Unlike glucose and sucrose, fructose does not raise blood sugar rapidly. It can be utilized for energy in limited amounts without the need for insulin, but it is not ideal for individuals with diabetes to take large amounts of fructose.

**Mannitol** and **sorbitol** are sugar alcohols but only

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half as sweet as sucrose. Their metabolism is like that of fructose. Mannitol provides about 2 calories per gram and sorbitol has the same energy value as sucrose. Both are quite commonly used as sweetening agents in foods for diabetics, but are not ideal sweeteners. A word of caution is necessary as over-consumption may lead to diarrhoea and abdominal discomfort.

**Xylitol** is present in many fruits and vegetables. It is as sweet as sucrose and both have the same calorie value. The metabolism of xylitol is very similar to that of sorbitol. Of all the nutritive sweeteners, xylitol is the only one that does not promote tooth decay. It has been used as a sweetener in chewing gum.

**Aspartame** is the newest member of the sugar substitutes and provides 4 calories per gram. It is composed of two amino acids (the building blocks of protein), aspartic acid and phenylalanine. It is around 200 times sweeter than sucrose. As a result, less is needed for sweetening and few calories are supplied. To date, aspartame has been proven safe from any harmful side effects. It has also been given the go-ahead for use by pregnant diabetics. The sweetening effect of aspartame is destroyed by heat, therefore it cannot be used in baking or cooking. It can be added after cooking.

The American Dietetic Association recently issued a position statement regarding the use of nutritive and non-nutritive sweeteners which states "The American Dietetic Association recommends that individuals use moderation in their consumption of both nutritive and non-nutritive sweeteners" (1).

The ADA has also suggested that it may be wiser to use a variety of sweeteners so as to reduce the possible risk of consuming any one sweetener.

Table 1. Acceptable Daily Intake (ADI) for aspartame, cyclamate and saccharin

REFERENCE PERSON	ACCEPTABLE DAILY INTAKE mg/day		
	Aspartame	Cyclamate	Saccharin
Child 20Kg (44Lbs)	800	200	0-50
Woman 50Kg (121Lbs)	2000	500	0-125
Man 85Kg (187Lbs)	3400	850	0-212.5

Source: Reference 2

Guidelines have been drawn up by WHO/FAO on acceptable daily intakes of various sweeteners (see Table 1).

### Diabetic products

Just because a product is labelled "suitable for diabetics" does not mean it can be taken in unlimited quantities by all diabetic individuals. Products designated "diabetic" are termed so by manufacturers because they use no sucrose. Many such products have been developed using the above mentioned sweetening agents. Unfortunately, most of these cannot be considered as "free foods" (ie. foods that contain very little or no calories and can be consumed in any amount) for diabetic individuals. As the majority of them are sweetened with sugar substitutes rather than an artificial sweetener, the calorie content can be the same as a similar sugar-sweetened product. A small quantity of these products is permissible as part of the daily food allowance of those diabetic individuals who are not overweight. Overweight diabetics, however, should completely avoid those products which are high in calories.

Below is a review of several diabetic products found in the local supermarkets and pharmacies.

**Jams.** There are several different brands of diabetic jam available, with a wide range of flavours. Sweetening agents include fructose (natural fruit sugar, usually as fruit juice concentrate), cyclamates and sorbitol. Diabetic jam can be useful in dressing up a piece of plain toast for those diabetics with other special dietary restrictions, for example, those on a low fat, high calorie diet or a low protein, high calorie diet.

**Biscuits and cakes.** Recently diabetic biscuits and cakes have made an appearance in Singapore. The majority of these are sweetened with fructose. Again as these foods have calories (some as high as 87 calories per biscuit), they should be avoided by overweight diabetics. Moreover, they contain considerable amounts of carbohydrate from flour. They therefore have to be counted as part of the daily carbohydrate allowance.

**Chocolate and sweets.** 100 grams of diabetic chocolate has between 400-600 calories. A regular chocolate bar has approximately the same number of calories. Needless to say diabetic chocolate cannot be eaten in unlimited amounts. Diabetic chocolate tends to have a higher fat content and lower carbohydrate than regular chocolate. It is considered diabetic because it is sweetened with sorbitol and mannitol or fructose. In addition to diabetic chocolate, there are other varieties of sweets and chewing gum available. These special products are handy for diabetic children in the sense that they need not miss out when their friends are enjoying regular chocolates and sweets. Consuming too much chocolate sweetened with sorbitol, however, can lead to diarrhoea.

**Soft drinks and beverages.** There are several diet soft

drinks available in Singapore. All are sweetened with saccharin and provide less than one calorie per can. As such, the diabetic person can enjoy a fizzy drink whenever he feels like it. Sugar-free cordials and fruit "syrops" are now available too. A cocoa-like beverage for diabetics has also been marketed but this is high in calories and should not be taken excessively.

A special beer with reduced carbohydrate content is available for diabetics. It has a higher alcohol content than regular beer. Alcohol is high in calories; alcohol can also cause swings in blood sugar, and produces a reaction with some diabetic medication. Therefore diabetics should check with their doctor before consuming alcohol.

### Other special diet products

There are several low calorie diet products which are not labelled diabetic, but are often assumed to be suitable for those with diabetes. One of these is "dietetic" bread. This is made from refined white flour and other regular ingredients except vegetable fat. Each slice has approximately half the calories of regular bread. It contains very little fibre. International studies have shown that high-fibre carbohydrate is the best type of carbohydrate for those with diabetes, since it slows down the absorption of glucose and thus helps prevent rapid rises in blood glucose after a meal. Hence, diabetic individuals are encouraged to eat wholegrain, wholemeal or high fibre breads.

Another product often asked about is diet margarine. It is desirable for individuals with diabetes, and indeed non-diabetics persons to have a moderate fat intake, particularly if they are overweight. Hence diet margarine, which has half the calories of regular margarine or butter can be helpful. It may be more economical, however, to buy regular margarine and simply use less.

Proprietary slimming products such as meal replacement drinks or biscuits are **not** suitable for diabetics.

The desirable dietary goal for those with diabetes is to eat normal foods, to choose a varied and balanced diet and control portion size. Special products may be used occasionally to add variety to the diet. Before an individual with diabetes purchases any special product, he should consult a dietitian as to whether the product is appropriate for his diet. Diet counselling will also teach him how to incorporate normal foods into his diet and to achieve good blood glucose control.

### References

1. American Dietetic Association. Position of the American Dietetic Association: Appropriate use of nutritive and non-nutritive sweeteners. J. Amer. Diet. Assoc., 87(12): 1689-1694, 1987.
2. Eno, J. Choosing and comparing sweeteners. Diabetes Dialogue, 35(1): 25-29, 1988.

# Singapore Dietitians' Association President's Report, 1987 - 88

All members of the various committees continued to serve the Association with dedication. The Central Committee held 13 meetings in the past year. One committee member, Mrs Pat Seow Chin, withdrew from the committee in December 1987.

The following is an account of the activities of the Association and matters dealt with by the Central Committee in the past year:

### Professional/Educational Meetings

- 24.8.1987 - "Safe Foods From Tomorrow's Flight Kitchen" by Ms Esther Loh from CIAS
- 5.10.1987 - "Dietary Guidelines - Implications For Food Policy" by Dr Stephen Fallows from University of Bradford, U.K.
- 6.2.1988 - Practical Session on Skincare and Make-Up (Sponsored by Nestle)
- 27.2.1988 - Symposium on "The Effects of Chicken Essence on Metabolic Rate and Blood Restoration"  
Speakers - Dr. Catherine Geissler from U.K.  
- Dr. Kong Yun Cheung from Hong Kong  
(Sponsored by Cerebos)

SDA held a dinner for the two speakers and representatives from Cerebos, sponsors of the Symposium, on the evening of 27th February 1988 at the Tung Lok Shark's Fin Restaurant. All members of the Central Committee were invited.

Following this dinner, the Central Committee decided that SDA would hold an annual dinner for all members of the various committees as a way of expressing appreciation for all the time and effort put in by these members. This was also decided in recognition of the fact that members attending SDA meetings do not claim for expenses incurred.

### Joint Project on Nutrition Education with Training & Health Education Department, Ministry of Health

Although SDA was successful in getting Nestle Singapore (Pte) Ltd. to sponsor the printing of pamphlets for this project, we were unable in the end to take up the sponsorship as we still have not had confirmation from THE regarding the contents of the pamphlets.

### Singapore Professional Centre - Career Exhibition

Although SDA did not have a booth at the exhibition, one of our members, Mrs. Evelyn Fong, gave a talk on "Dietetics Today" on 12th March, 1988.

### Ogilvy & Mather - Public Relations

Anna Jacob gave a talk on "Health and Food" at the Hyatt Regency Hotel on 24th September 1987, at the request of the above company.

### Drs Horne & Chin Pte. Ltd.

The above requested permission from SDA to reprint a page on guidelines for lowering blood cholesterol from "The Singapore Dietitian" Vol. 2, No. 1, 1986. Permission was granted on condition that they include an acknowledgement that it has been reproduced from our journal.

### Singapore Broadcasting Corporation

Susani Karta was interviewed in Malay on two programmes. One was in October 1987 on television, and this focused on fibre. The second one was in January 1988 on radio, and this was on nutrition for children, with emphasis on the current trend of eating fast foods.

### Training and Health Education Department, Ministry of Health

1) The above requested SDA to give our professional opinion on the usefulness of a booklet compiled by them on diabetes education and to give suggestions on ways to improve it. They also wanted our opinion on the use of 80 calorie portions in the teaching of diabetic diets as currently taught by the Diabetic Society of Singapore.

Susani Karta, Lynn Alexander, Thio Yee Fui, Sally Lee, Chai Kwok Hoey and Helen David met to discuss the matter and a reply was sent to THE.

2) The above also invited members of SDA to participate in nutrition education of the public on a voluntary basis by giving talks at community centres etc. Unfortunately, there were no volunteers.

### Ministry of Health

Dr. Chen Ai Ju (D.D.M.S. - Primary Health Division) has written to SDA regarding a Health Promotion Centre at the New Toa Payoh Polyclinic. Our members may make use of the facilities (free of charge) to hold talks or run a dietetic clinic. It is understood that we may charge a

(Contd. on Page 14)

# Fifth Annual General Meeting of the Singapore Dietitians' Association



Committee members posing for the photographer at the dinner, From left to right: Mrs Helen David, Mrs Evelyn Fong, Mrs Lynn Alexander and Mrs Yeong Boon Yee.

The Fifth Annual General Meeting and dinner of the Singapore Dietitians' Association was held on the 23rd of April, 1988 at the Mandarin Ballroom 1, Mandarin Hotel, Singapore organised by Mrs Evelyn Fong, Hon Secretary, 1987-1988. She also kindly consented to be the master of ceremonies.

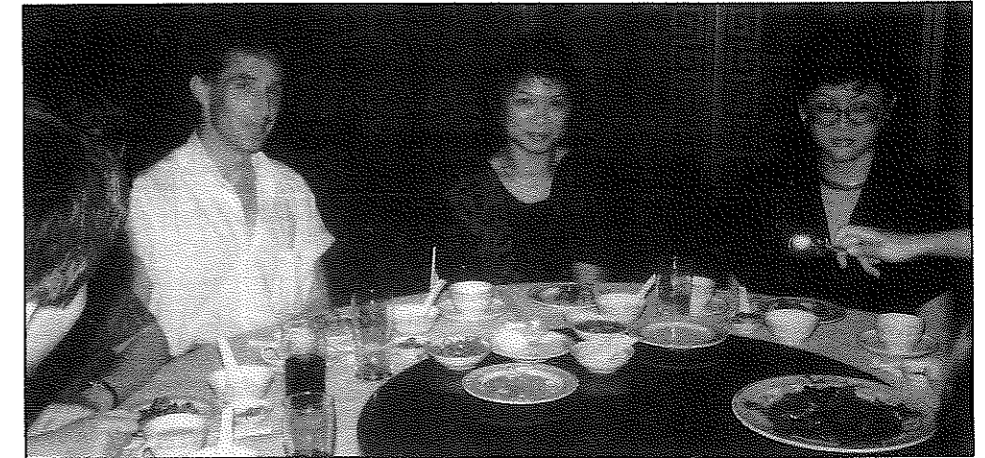
The President's report for the year 1987-1988 is reproduced in full in this issue.

An excellent ten course Chinese dinner was enjoyed by the Association's members and their well-wishers.

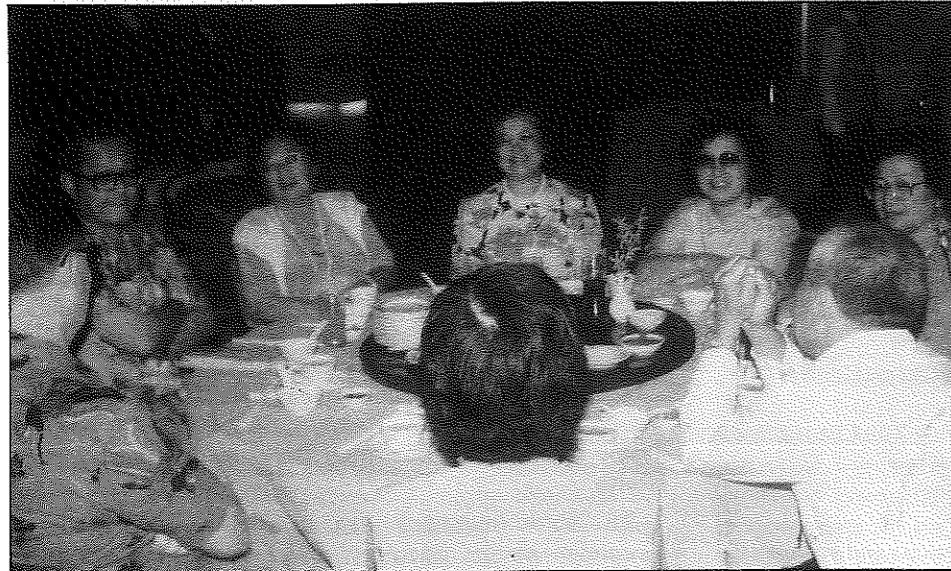
Every diner went home laden with generous gifts donated by several commercial organisations.

This year the winner of "Guess the weight of the cake," (baked by our President, Mrs. Helen David) was Ms Chai Kwok Hoey.

Each year the Annual General Meeting serves as an evening at which members can meet and appreciate all that is done by and through the Association. Election of office bearers for the year 1988-1989 was also held.



Guests at the dinner held after the Annual General Meeting.



A family affair for Mrs Pauline Lee.



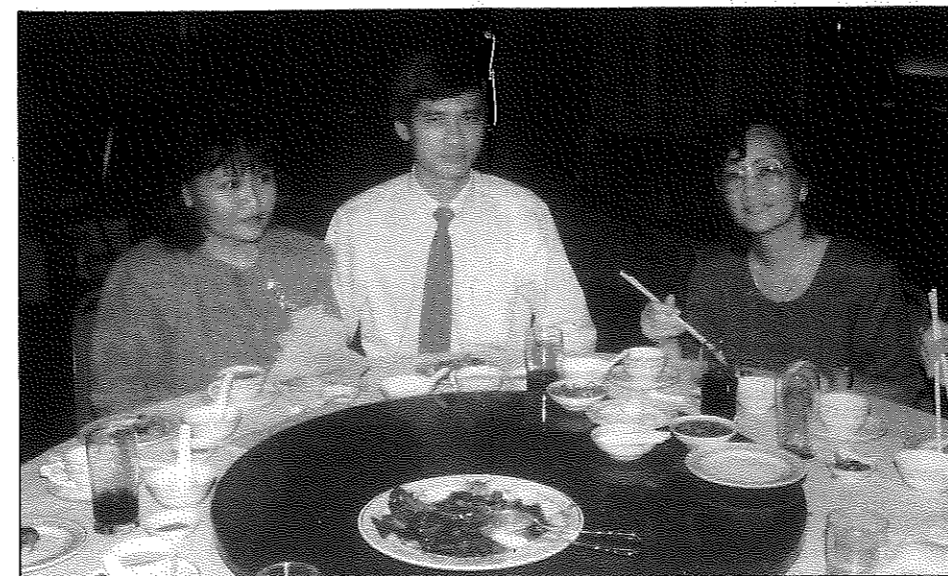
From left, Mrs Anna Jacob, Mdm Fong Mei Lin, Mrs Thio Yee Fui, and Mdm Koay Saw Lan.



Members trying their hand at guessing the weight of the cake.



Ms Chai Kwok Hoey (left), winner of the "Guess the weight" competition walking away with the delicious cake baked by Mrs Helen David, President, SDA.



Ms Susani Karta (left) and Mrs Tan Wei Ling (right) enjoying the meal and the company.



Committee members of the SDA for the year 1987-1988.



SDA committee members for the year 1988-1989.

nominal fee for our services. Confirmation of this and details will soon be circulated to members.

#### Editorial Committee

This committee is now more structured and in 1987-88 comprised the following:

- Chairperson — Lynn Alexander
- Editorial Co-ordinator — Anna Jacob
- Secretary — Chai Kwok Hoey
- Subscriptions Secretary — Yeong Boon Yee
- Committee Members — Susani Karta  
Evelyn Fong

With their unswerving efforts, they continue to produce a much praised journal which has achieved a wider circulation.

#### Public Education Committee

Yeong Boon Yee, who heads this committee, has been co-ordinating with the various newspapers regarding publication of articles from SDA. Details are as follows:

- 1) **The Sunday Times** — Further to the first six articles, this paper has published another three articles on Vegetarian Diet, Calcium, and Slimming Products. For these three articles, SDA was paid \$130.00 per article.
- 2) **Lianhe Zao Boa** — The six articles which were first published in 1986/87 in the Sunday Times were re-written and published in this newspaper. In addition, another article on Diabetic Products was also published in January this year. This newspaper paid SDA \$100.00 per article.
- 3) **Berita Harian** — The same six articles have been offered

to this newspaper at \$50.00 per article. Although they have paid us for all the six articles, they have not published them yet.

#### Position Papers Committee

This committee first met on 7th September 1987, and has had ten meetings to date. The committee consists of:

- Chairperson — Susani Karta
- Secretary — Nancy Evans
- Committee Members — Lynn Alexander  
Helen David  
Tan Wei Ling  
Thio Yee Fui  
Chai Kwok Hoey

The first position paper to be formulated will be on dietary management of diabetes mellitus. It is near completion and the committee hopes to circulate its recommendations to members soon for discussion and agreement.

#### Membership

	1987	1988
Full Members	30	29
Affiliate Members	23	23

We may not have grown in numbers, but we have certainly grown in strength as we forge ahead with our limited funds and resources.

Mrs. Helen David  
President  
Singapore Dietitians' Association

### SUBSCRIPTION FORM

(The journal is free to 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/money order for S\$8, (US\$8 for overseas subscriptions) inclusive of postage, made payable to "Singapore Dietitians' Association".

NAME: .....

ADDRESS: .....

..... TEL: .....

OCCUPATION: .....

## SPECIAL REPORT:

# Conference on Disease Prevention and Health Enhancement

31 July – 1 August 1988, Singapore

*The Conference organised by the Academy of Medicine (Singapore) was attended by doctors, allied health professionals, consumers, government and financing agencies. Delegates came from Australia, Bangladesh, Indonesia, Malaysia, Thailand, Taiwan and U.S.A., with the greater portion coming from Singapore.*

*The majority of speakers were from Singapore. Invited overseas speakers were: Prof John W Farquhar, Director, Stanford Centre for Research in Disease Prevention (USA); Prof Nanette K Wenger, Professor of Medicine (Cardiology), Emory University School of Medicine, Atlanta, Georgia (USA); Dr. Morris Notelovitz, President and Medical Director, The Climacteric Clinic Inc, Gainesville, Florida, (USA) and Dr. Larry W Gibbons, Director, The Cooper Clinic, Dallas, Texas, (USA).*

*The guest of honour, Mr. Yeo Cheow Tong, Acting Minister for Health, opened the Conference. Evelyn Fong, sponsored by the Singapore Dietitians' Association, attended the Conference.*

*Following are selected abstracts of talks presented at the Conference.*

#### NUTRITIONAL GUIDELINES FOR HEALTH AND WELL-BEING

Mrs. Tan Wei Ling

*Training and Health Education Department, Ministry of Health (Singapore)*

The nature of diet-related diseases in affluent societies has changed over the last two decades. The concern today is with high mortality and morbidity of diseases attributable to overeating and poor food choices as well as the consumption of an unbalanced diet. Nutrition educators in many countries have developed nutritional guidelines for the general population. The constant review of these guidelines is based on current concepts of nutrition, food composition, nutrient needs, the relation of diet to health and food consumption practices of the people.

The present nutritional guidelines for Singapore emphasize the need to consume a variety of foods to provide essential nutrients while maintaining desirable body weight and moderating dietary constituents that may contribute to certain chronic diseases. Ways of how dietary changes may be adopted by individuals are suggested. Efforts have been made recently to quantify the guidelines.

Mrs. Tan suggested a national directive to give impetus to health campaigns and programmes already in existence. There should be co-operation between those promoting good health, the food industry and the government. There is also a need to monitor hawker centres, school canteens and hospital catering.

Strategies for promoting dietary modifications include publicity of the guidelines, provision of dietary information and skill through education and nutrition labelling of food, increase in the availability of healthier foods and stricter controls over product claims. Some obstacles hindering implementation are funding, low interest in food and nutrition studies, shortage of community dietitians and nutritionists, personal attitudes of com-

munity health educators, inconsistent nutrition and health messages and the lack of a concerted and co-ordinated effort to encourage healthier eating habits.

#### HEALTH AWARENESS AND BEHAVIOUR AMONG SINGAPOREANS

Dr. Luisa Lee

*Training and Health Education Department, Ministry of Health (Singapore)*

A national survey was conducted in 1986/87 among persons aged 15-64 residing in Singapore to determine the level of health knowledge and health-related behaviour. The results of the survey are compared with that of a similar one conducted in 1984.

Almost half of 1,815 people surveyed did not take any exercise; one in four still ate more than three eggs a week, and 45% of smokers surveyed made no attempts to give up smoking despite knowing it for a health hazard.

One in five considered themselves overweight. One in 20 thought they were obese. Four in five had not been to the dentist for a check-up within the last 12 months, though dentists recommend a check-up every six months. More than 60 per cent of women aged between 20 and 64 years had never checked for lumps in the breast, which may be an early sign of breast cancer.

On the brighter side, there were signs that Singaporeans were moving towards a healthier lifestyle: Over the last 12 months before the survey, more than half had switched to corn or soya oil for cooking. Almost 60 per cent had made the change from butter to margarine. Also, people were eating less fried food. In the 1984 survey, 43 per cent took fried foods twice a week. This has fallen to 23.8 per cent in the recent survey. More people – almost 30 per cent – exercised one to three times a week. More than 60 per cent said they were not under stress in the last month before the survey.



## DIET, EXERCISE AND BEHAVIOURAL THERAPY IN THE MANAGEMENT OF OBESITY

Dr. Ang Peng Chye

Ang and Kong Psychiatric and Behavioural Medicine Clinic, Mt. Elizabeth Medical Centre (Singapore)

Together with Dr. Oon Chong Hau from the Dept of Rehabilitation Medicine, SGH, Singapore, Dr. Ang Peng Chye started a programme in 1986 to help patients fight the battle of the bulge through diet, exercise and behavioural therapy.

Forty two clients participated in an obesity treatment programme which comprised fourteen sessions:

The participants were given a behavioural analysis to determine their level of commitment before the programme commenced.

The treatment programme comprised education on dieting and exercise, and behavioural modification of their eating and exercise behaviour.

Five participants dropped out of the programme. Of the remaining thirty-seven, all except six lost more than ten kilograms during the treatment process.

Two, of the five who dropped out, were national servicemen, one of whom admitted that he feared he would be upgraded. Among the six who failed were women referred to the programme by their plastic surgeons, who had first sought shortcut means like liposuction in which fat is sucked out surgically. But among those who succeeded were two national servicemen who were about to complete their stint in the army.

## THE NEWSTART WELLNESS SEMINAR: A LIFESTYLE MODIFICATION PROGRAMME

Dr. Clarence Ing

Youngberg Memorial Adventist Hospital (Singapore)

The Newstart Wellness Seminar is a Lifestyle Modification Programme introduced to Singapore in February 1985. There have been 14 programmes with over 150 "guests" participating in the seminars.

Blood tests of the participants were done prior to entry into the seminar and again on the fifth day of the seminar to record any changes during their participation in the seminar. The parameters checked on the last day of the programme are the serum cholesterol, triglyceride and HDL cholesterol. In testing over 70 participants during the seminars, we have found that individuals with the highest serum cholesterol usually had the greatest decrease in values.

During the seminar, the "guests" are placed on a low fat, no cholesterol diet with a regular supervised exercise programme in the morning and evening. An integral part of the seminar are sessions on nutrition, exercise and stress management, as well as a comprehensive physical examination and laboratory studies and resting and stress electrocardiogram.

It has been demonstrated that you can make marked changes in their lipid profiles during this seminar by means of diet and exercise. The seminar also shows the "guests" the advantages of living this way and how they

can accomplish this for the remainder of their lives.

## CLIMACTERIC MEDICINE AND SCIENCE: PROMOTING THE HEALTH AND LIFE QUALITY OF WOMEN

Dr. Morris Notelovitz

President and Medical Director The Climacteric Clinic Inc. Gainesville, Florida (USA)

The life expectancy of women in the United States is now 78 years of age and is reflective of female longevity in many other countries. As women mature from their reproductive to their post-menopausal years, certain recognizable biologic changes occur that, if missed or neglected, can extol a disproportionate negative effect on the individual's quality of health and well-being.

Atherosclerosis and osteoporosis characterize two potentially preventable diseases that are directly influenced by loss of normal ovarian function and a negative lifestyle milieu. Age-related chronic diseases such as urinary incontinence and cancer are examples of other conditions that develop during the later climacteric years.

Climacteric medicine is a multi-disciplinary approach to the healthcare needs of the total woman. It involves consumer education; appropriate nutrition and exercise; avoidance of harmful habits and the application of modern medical technology and expertise. Together, the ultimate goals of climacteric medicine are assured, namely, a healthy mind in a healthy body in a healthy environment.

## THE WELL WOMAN HEALTH ENHANCEMENT PROGRAMME IN SINGAPORE GENERAL HOSPITAL

Dr. Yu Su Ling

Dept of Obstetrics and Gynaecology, Singapore General Hospital (Singapore)

This programme aimed to screen women in the climacteric and menopause for cancer, cardiovascular disease and other potential diseases. Advice and treatment were also given accordingly.

There were 96 registered women analysed from the programme. Two thirds were in the 40-49 years age group. 7% had surgical menopause and 25% of patients were on hormonal replacement therapy.

Significant findings were as follows:

### Cancer:

Cervical smears and colposcopy detected one patient with cervical intraepithelial neoplasia II and two patients with cervical wart viruses.

Gynaecological ultrasound detected no abnormal ovaries although 68% of patients had benign uterine abnormalities.

X-ray mammography detected 48% abnormal findings. 36% of women had mammary dysplasias, 5% had calcifications and 6% had lesions that were suspicious of cancer.

### Cardiovascular diseases:

10% of patients had raised serum cholesterol and raised low density lipoproteins. Cardiovascular stress tests were positive in 7.6% and negative in 88% of patients tested.

## PATTERNS OF SMOKING AMONG SINGAPOREANS

Assoc. Prof. Lee Hin Peng

Dept of Community, Occupational and Family Medicine National University of Singapore (Singapore)

Based on the aetiological fractions derived by medical researchers, the estimated number of deaths in Singapore (1981-1985) attributable to tobacco consumption include the following:

All causes of death	13616	(20.8%)
Lung cancer	2500	(3.8%)
Ischaemic heart disease	3095	(4.7%)
Cerebrovascular disease	1280	(2.0%)
Chronic bronchitis & emphysema	635	(1.0%)

In the mid-seventies, a few base-line surveys showed an average of about 25% of adults (aged 15 years and above) were regular smokers. Males predominated (6-8:1), prevalence increased with age reaching peak after 40 years and cigarette consumption was 16/day in males and 10/day in females. Malays tended to have higher smoking rates, as did those with little or no education.

In 1984, a repeat survey showed the overall rate at 19% and the age-specific rates had declined, especially in the group above 40 years (by up to 30%). Again, in 1987, another survey showed the overall rate at 13.6% and age-specific rates declined by another 30% from 1984. With the National Smoking Control Programme at full steam, there is every prospect that we will be able to achieve our goal of becoming a nation of non-smokers.

## HYPERTENSION AND QUALITY OF LIFE ISSUES

Prof. Nanette K. Wenger

Professor of Medicine (Cardiology)  
Emory University School of Medicine Atlanta, Georgia (USA)

Most patients with mild to moderate hypertension are asymptomatic. Any adverse response to nonpharmacologic or pharmacologic therapies can negatively influence some aspect of the patient's sense of well-being and life satisfaction; this will likely limit the compliance with and the resultant benefits of therapy. The diagnosis of hypertension itself is associated with psychologic consequences, termed the "labeling effect," that impair life quality. A number of lifestyle modifications and

a variety of highly effective and safe classes of antihypertensive agents can satisfactorily control blood pressure in most patients. Evaluation of the patient's response to an antihypertensive regimen should, in addition to measurement of the level of blood pressure and review of laboratory test values, include assessment of quality of life outcomes: impact of therapy on the patient's daily routine; fatigue or activity limitations; sexual dysfunction; impairment of memory, alertness, mood, or cognitive ability; sleep dysfunction; work performance and satisfaction; and satisfaction with family, social and leisure time activities.

## LIPID LOWERING INTERVENTION: A NEW APPROACH TO CARDIAC REHABILITATION

Dr. Oon Chong Hau

Dept of Rehabilitation Medicine  
Singapore General Hospital (Singapore)

The deleterious effects of raised plasma lipids on the progression of coronary artery disease have been well established. Recent research data suggests that intensive lipid lowering represents a new approach to Cardiac Rehabilitation and that particular population sub-groups eg patients with atherosclerosis require a more intensive lipid lowering strategy.

A survey was done on 25 patients participating in the Cardiac Rehabilitation Program of Singapore General Hospital. These patients had a mean age of 54.6 years (with 25% less than 50 years and 17% more than 60 years), and the mean duration of their participation in the Rehabilitation Program was 20.8 months. All patients had been on an exercise and diet control program following which they were enrolled in an intensive lipid-lowering protocol.

The pre- and post-medication lipid profiles showed a decrease of 14% in the total cholesterol levels, and concomitantly, a fall of 18% in the LDL-cholesterol level. Triglyceride levels fell by 4% whilst HDL levels were elevated by 5%. Total cholesterol/HDL-cholesterol ratio showed a decrease of 18%. Pharmacological intervention included Gemfibrozil, Cholestyramine and Clofibrate.

Initial results suggest that a Cardiac Health Maintenance Program represents a useful model system through which total intensive lipid management could be undertaken.

# Recommended Daily Dietary Allowances for Singapore

Tan Wei Ling, B.H.Sc., Dip. Ed., Acad. Postg. Dip. Nutr., SRD

Recommended daily dietary allowances (RDDA) are recommendations of **average daily** intake of energy and certain essential nutrients considered to be adequate to meet the known nutritional needs of **population groups**. They provide for individual variations and are designed for the maintenance of good nutrition of practically all **healthy** people in the population. RDDA therefore, (except for energy), include a substantial margin of safety.

RDDA are intended to be met by a diet of a **wide variety of common foods** that are acceptable, palatable and economically attainable by the population.

## Uses of RDDA

RDDA are used for the following:

- assessing food consumption surveys
- evaluating the adequacy of food supplies in meeting nutritional needs
- planning diets, menus and food rations
- estimating food requirements and procuring food supplies for groups
- establishing guides for caterers in institutions and for food assistance programmes
- developing new food products by industry
- establishing guidelines for nutritional labelling of foods
- assessing nutritional quality of food products.

## Limitations in the use of RDDA

RDDA are not applicable to specific individuals and they do not cover conditions that require dietary and therapeutic measures. Moreover, RDDA are not intended to be met by supplementation or by extensive use of fortification of single foods.

## RDDA for use in Singapore

Tables 1 and 2 give the recommended daily dietary allowances for population groups in Singapore. The recommendations are adapted from levels drawn up by various international groups of experts for the World Health Organisation and Food and Agricultural Organization of the United Nations. The RDDA for Singapore are used by the Ministry of Health for developing nutrition education programmes.

*Mrs Tan Wei Ling is a qualified public health nutritionist and a registered dietitian. Head of the Resources Section of the Training and Health Education Department, Ministry of Health, she sits on a number of food and nutrition related committees.*

## Notes to Tables 1 and 2:

- a) Energy and Protein Requirements. WHO Technical Report Series No. 724, 1985. Kilojoules (kJ) are calculated from the relation 1 kilocalorie = 4.18 kJ
- b) For infants, Net Protein Utilization (NPU) is taken as 80%. For all others, NPU is taken as 70%.
- c) Calcium Requirements. Report of a FAO/WHO Expert Group, FAO, Rome, 1961.
- d) Requirements of Ascorbic Acid, Vitamin D, Vitamin B12, Folate and Iron. Report of a Joint FAO/WHO Expert Group, FAO, Rome, 1970.
- e) Values apply when 10 – 25% of energy in diet come from animal foods.
- f) Requirements of Vitamin A, Thiamin, Riboflavin and Niacin. Report of a Joint FAO/WHO Expert Group, FAO, Rome, 1965.
- g) 1 retinol equivalent = 1 mcg retinol or 6 mcg B-carotene or 12 mcg biologically active carotenoids.
- h) As cholecalciferol.
- i) 1 niacin equivalent = 1 mg available nicotinic acid or 6 mg tryptophan.

Table 1. Recommended Daily Dietary Allowances for Normal Healthy People in Singapore (Children)\*

Age groups	Height (a) cm	Weight (a) kg	Energy (a)		Protein (a,b) g	Calcium (c) g	Iron (d,e) mg	Vit A (retinol) Equiv. (f,g) mcg	Vit D (d,h) mcg	Thiamin (g) mg	Riboflavin (f) mg	Niacin Equiv. (f,i) mg	Vit B12 (d) mcg	Folic Acid (d) mcg	Ascorbic Acid (d) mg
			kcal	kJ											
<b>Infants</b>															
3 – 6 mth	—	7	700	2300	16	0.5 – 0.6	7	300	10.0	0.28	0.42	4.6	0.3	60	20
6 – 9 mth	—	8.5	810	3400	17	0.5 – 0.6	7	300	10.0	0.32	0.49	5.3	0.3	60	20
9 – 12 mth	—	9.5	950	4000	18	0.5 – 0.6	7	300	10.0	0.38	0.57	6.3	0.3	60	20
<b>Younger children</b>															
1 – 2 yrs	—	11	1150	4800	19	0.4 – 0.5	7	250	10.0	0.46	0.69	7.6	0.9	100	20
2 – 3 yrs	—	13.5	1350	5700	22	0.4 – 0.5	7	250	10.0	0.54	0.81	8.9	0.9	100	20
3 – 5 yrs	—	16.5	1550	6500	25	0.4 – 0.5	7	300	10.0	0.62	0.93	10.2	1.5	100	20
<b>Older children</b>															
<b>Boys:</b>															
5 – 7 yrs	—	20.5	1850	7700	30	0.4 – 0.5	7	300	10.0	0.74	1.11	12.2	1.5	100	20
7 – 10 yrs	—	27	2100	8800	39	0.4 – 0.5	7	400	2.5	0.84	1.26	13.9	1.5	100	20
10 – 12 yrs	144	34.5	2200	9200	49	0.6 – 0.7	7	575	2.5	0.88	1.32	14.5	2.0	100	20
12 – 14 yrs	157	44	2400	10000	61	0.6 – 0.7	12	725	2.5	0.96	1.44	15.8	2.0	200	30
14 – 16 yrs	168	55.5	2650	11100	74	0.6 – 0.7	12	725	3.5	1.06	1.59	17.5	2.0	200	30
16 – 18 yrs	176	64	2850	11900	80	0.5 – 0.6	6	750	2.5	1.14	1.71	18.8	2.0	200	30
<b>Girls:</b>															
5 – 7 yrs	—	20.5	1750	7300	30	0.4 – 0.5	7	300	2.5	0.70	1.05	11.6	1.5	100	20
7 – 10 yrs	—	27	1800	7500	39	0.4 – 0.5	7	400	2.5	0.72	1.08	11.9	1.5	100	20
10 – 12 yrs	145	36	1950	8200	51	0.6 – 0.7	7	575	2.5	0.78	1.17	12.9	2.0	100	20
12 – 14 yrs	157	46.5	2100	8800	63	0.6 – 0.7	18	725	2.5	0.84	1.26	13.9	2.0	200	30
14 – 16 yrs	161	52	2150	9000	66	0.6 – 0.7	18	725	2.5	0.86	1.29	14.2	2.0	200	30
16 – 18 yrs	163	54	2150	9000	60	0.5 – 0.6	19	750	2.5	0.86	1.29	14.2	2.0	200	30

\* Notes to the table are on page 18.

Table 2. Recommended Daily Dietary Allowances for Normal Healthy People in Singapore (Adults)\*

Age groups	Height (a)	Weight (a)	Allowance of energy				Protein (a,b)	Calcium (c)	Iron (d,e)	Vit A (retinol) Equiv. (f,g)	Vit D (d,h)	Thiamin (g)	Riboflavin (f)	Niacin Equiv. (f,i)	Vit B12 (d)	Folic Acid (d)	Ascorbic Acid (d)
			kcal		kJ												
			Activity level		Activity level												
Adults Men: 18-30 yrs 30-60 yrs Over 60 yrs	170 170 170	63.5 63.5 63.5	Light	2550	Light	10700	Light	68	750	2.5	1.18	1.77	19.5	2.0	200	30	
			Moderate	2900	Moderate	12100	Moderate	68	750	2.5	1.16	1.74	19.1	2.0	200	30	
			Heavy	2100	Heavy	8800	Heavy	68	750	2.5	0.98	1.47	16.2	2.0	200	30	
Women: 18-30 yrs 30-60 yrs Over 60 yrs	160 160 160	54 54 54	Light	2000	Light	8400	Light	58	750	2.5	0.84	1.26	13.9	2.0	200	30	
			Moderate	2150	Moderate	9000	Moderate	58	750	2.5	0.86	1.29	14.2	2.0	200	30	
			Heavy	1800	Heavy	7500	Heavy	58	750	2.5	0.80	1.20	13.2	2.0	200	30	
Pregnant women: full activities reduced activities	-	-		+ 285		+ 1200		+ 9	750	10.0	+ 0.11	+ 0.17	+ 1.9	3.0	400	50	
				+ 200		+ 850		+ 9	750	10.0	+ 0.08	+ 0.12	+ 1.3	3.0	400	50	
Lactating women first 6 mths after 6 mths	-	-		+ 500		+ 2100		+ 25	1200	10.0	+ 0.2	+ 0.30	+ 3.3	2.5	300	50	
				+ 500		+ 2100		+ 19	1200	10.0	+ 0.2	+ 0.30	+ 3.3	2.5	300	50	

\* Notes to the table are on page 18.

## In Brief...

### Fish oil - how much should we consume?

The omega-3 fatty acids (found particularly in fish oils) represent an important class of polyunsaturated fatty acids. Chief among them are arachidonic, eicosapentaenoic, and docosahexaenoic acids. Their synthesis is slow in humans. Aging, certain diseases and large intakes of n-6 fatty acids in the diet, reduce the synthesis of eicosapentaenoic and docosahexaenoic acids.

n-3 fatty acids have an impact on plasma lipids, eicosanoid function and metabolism, atherosclerosis, and myocardial function.

The question is, how much fish oil should be taken daily to achieve cardiovascular benefit? The most commonly available supplements are 1ml capsules containing about 0.3g of eicosapentaenoic and docosahexaenoic acids. Cod liver oil is 20% n-3 fatty acids but its high vitamin A and D content limits the quantities that may be ingested safely.

Individuals are advised to increase their consumption of fish (replacing 2-3 red meat meals per week) rather than resort to supplements. Nevertheless, some concern has been expressed in regard to increased consumption of fish:

- Accumulation of mercury and chlorinated hydrocarbons (e.g., pesticides) in fish from coastal waters and lakes;
- the increased likelihood that products of auto-oxidation and lipid peroxidation may be carcinogenic;
- possible suppression of the immune system below its normal level of competence and the prolongation of bleeding time resulting from the ingestion of n-3 fatty acids might promote spontaneous or excessive bleeding.

Source: Leaf, A. and Weber, P.C., *New England Journal of Medicine*, Vol. 318, p549, March 3, 1988.

### Yo-yo dieting: dangers and prevention

New research shows that repeated efforts at dieting - losing and regaining weight over time - can seriously distort the body's weight-

regulation system. The Weight Cycling Project conducted at the University of Pennsylvania indicates that:

- yo-yo dieting may increase the proportion of body fat to lean tissue in the body.
- yo-yo dieters may redistribute the body fat (shifting it from thighs and hips to the abdomen) in a way that is dangerous to health
- the loss-gain cycle may increase the desire for fatty foods
- repeated cycles of losing and gaining weight may raise the risk of developing heart problems.

Source: Brownell, K., *The Yo-yo trap*, *American Health*, Vol 7, p78, March 1988.

### Prevention of adult atherosclerosis during childhood: preliminary report from Ross Conference

Thirty seven clinical scientists reviewed the existing evidence concerning the role of diet in children and adults in producing arterial lesions that cause coronary occlusions. A summary of the proceedings follows:

- No changes are indicated in the current diet for infants and children under about 2 years of age.
- The trend toward lower saturated fat intake in diets of children aged 2 - 18 years should be encouraged; there was a general agreement that 30% of the calories from fat with 20% from saturated fat was a reasonable target.
- Educational programs should discourage excessive limitations of fat intake that may lead to mineral deficiencies and growth failure.
- Support is needed for current research on the specific effects of diets containing some 30% calories from fat on growth and development.

Source: LaRosa, J. and Finberg, L., *The Journal of Paediatrics*, Vol 112, p 317, February 1988.

## Abstracts

### CAFFEINE AND BREAST CANCER: A NEGATIVE CORRELATION

Phelps, H. M. and Phelps, C. M., *Cancer*, Vol 61, March 1988, p. 1051.

Although there have been suggestions that caffeine exacerbates fibrocystic disease of the breast and may be a causal factor in breast cancer, data from this study do not support a positive association between caffeine intake and the development of breast cancer. With the use of multiple regression analysis, it was demonstrated that 85% of the international variation, of the data from 44 countries, in breast cancer rates is associated with variations in the fat intake. When this is accounted for, the partial correlation of breast cancer with caffeine intake is negative.

### BORON: POTENTIAL NUTRITIONAL IMPORTANCE

Nielsen, F. H., *Nutrition Today*, Vol. 23, Jan/Feb 1988, p. 4.

Studies suggest that boron supplementation in amounts commonly found in diets high in fruits and vegetables induces changes in post-menopausal women consistent with the prevention of calcium loss and bone demineralisation. Findings suggest that boron may be needed for the formation of the active and hydroxylated forms of some specific steroid hormones. Foods containing the highest levels (fresh weight g/g) include soymeal, 28; prune, 27; raisin, 25; almond, 23; peanut, 18; date, 9.2; and honey, 7.2.

### BEER, BREASTFEEDING AND THE WISDOM OF OLD WIVES

Grossman, E.R., *The Journal of the American Medical Association*, Vol 259, Feb 19, 1988, p. 1016.

Here is evidence that the intake of beer by lactating women serves as a stimulus to milk production. A specific increase in prolactin seems to be the cause. Two studies are cited in which ethanol containing beer was compared for its effect with ethanol solutions, non alcoholic beer, sparkling water or cocoa. Prolactin levels rose only with the intake of ethanol containing beer.

## Meetings

September 17, 1988  
**Legal Implications of your Patient Charting**  
 American Dietetic Association  
 Alexandria, VA.

Contact: Northern District Virginia  
 Dietetic Association  
 P.O. Box 5494  
 Springfield  
 VA 22150.

September 25-28, 1988  
**South Carolina  
 Annual Conference of Council for  
 Responsible Nutrition**

Contact: J.P. Cohn  
 222 10th Street  
 S.E.  
 Washington D.C. 20003

September 28, 1988  
**Update '88: Enteral and Parenteral  
 Nutrition**  
 Olean, NY.

Contact: Debra Hoffman  
 Program Chair  
 1105 Washington St.  
 Olean, NY 14760.

October 5-7, 1988  
**Conference on Nutrition And Aging**  
 Galveston, Texas

Contact: Continuing Medical  
 Education  
 University Of Texas  
 Medical Branch  
 Galveston, Texas.

October 24-26, 1988  
**Asean Food Conference '88**  
 Bangkok, Thailand

Contact: S. Maneepun  
 Deputy Dir.  
 Institute of Food Research  
 and Product Development  
 Kasetsart University  
 P.O. Box 170  
 Bangkok 10400  
 Thailand

## Abstracts (contd.)

**FAT VS CHOLESTEROL: THE  
 EGGS RETURN**  
*Jennings-Sauer, C. and Boyette,  
 J. K., American Health, Vol 7,  
 April 1988, p. 95.*

After years in nutritional disrepute, eggs are looking better. They are one of nature's most economical and nutritious foods. Concern over their cholesterol content has been paramount. Recent research, however, suggests that the amount of cholesterol in the diet may be less important than the amount of total fat and saturated fat. Research at the University of Columbia indicates that three eggs per day produce only a slight average increase in the blood cholesterol, but more important is the difference among the individuals. Only one-quarter to one-third of healthy individuals respond to excess dietary cholesterol with increased blood levels. Some researchers offer the advice that staying away from eggs will result in a slightly lower risk of heart disease.

**ADDITIVES IN RELATION TO  
 NUTRITION**  
*Conning, D. M., Journal of the Royal  
 Society of Health, Vol 108, Feb  
 1988, p. 6.*

On an industrial scale the only way to feed millions of people is to process food using chemical manipulation and low temperature preservation. Additives may be classified roughly into three categories:

- preservatives — to prevent inherent or microbial spoilage and development of rancidity in fats;
- preparation or processing chemicals — such as emulsifiers, stabilisers, and solvents;
- cosmetic agents — colours, flavours and texturing compounds that render the food more palatable

and attractive.

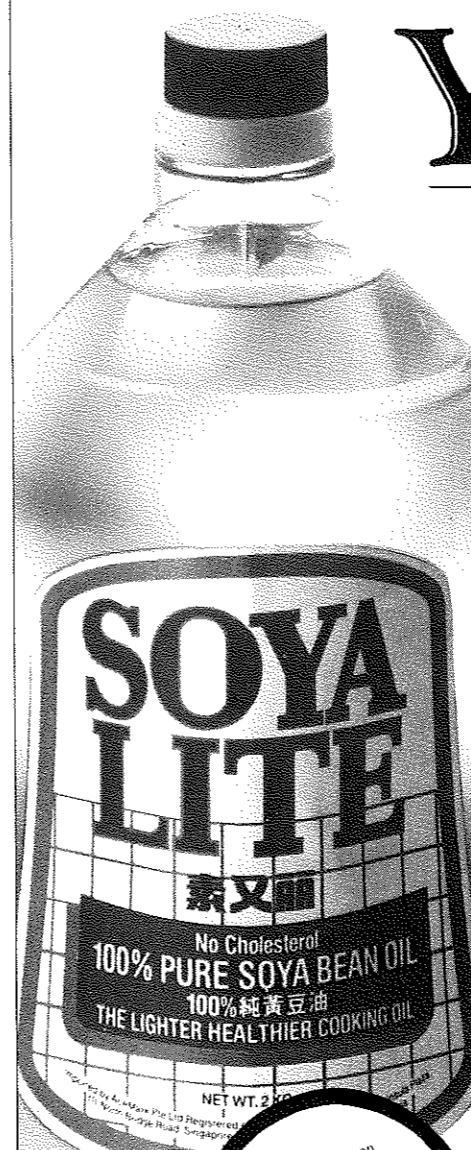
Use of additives is considered in terms of safety; the trend toward removal of chemical preservatives for marketing purposes means that food will be more vulnerable to microbiological contamination after the point of sale. Additives contribute to the wholesomeness of food products, enhance the colour and flavour of food and have prevented large scale wastage resulting in the cost of foods being much cheaper than it otherwise might be.

**ENERGY EXPENDITURE AND  
 INTAKE IN INFANTS BORN  
 TO LEAN AND OVERWEIGHT  
 MOTHERS**

*Roberts, S.B., Savage, J., Coward,  
 W. A., Chew, B., and Lucas, A.,  
 The New England Journal of Medi-  
 cine, Vol 318, Feb 25, 1988, p. 461.*

Data from this study suggest that reduced energy expenditure, particularly on physical activity, is an important factor in the rapid weight gain during the first year of life in infants born to overweight mothers. Total energy expenditure and metabolisable energy intake were measured in infants of 6 lean and 12 overweight mothers. Results were related to weight gain in the first year of life. No significant difference was observed between infants who became overweight at the age of one (50% of infants born to overweight mothers) and those who did not. With respect to weight, length, skinfold thickness, metabolic rate at 0.1 and 3 months, and metabolisable energy at 3 months. However, total energy expenditure at three months was 20.7% lower in the infants who became overweight than in other infants. The difference could account for the mean difference in weight gain.

# HOW TO KEEP YOUR OLD MAN YOUNG AT HEART.



To help your old man keep young at heart, you'd naturally watch out for cholesterol-rich foods.

And just because a cooking oil claims to be cholesterol-free you can't assume it's good for him.

Because some, like groundnut oil, are low in polyunsaturates.

The higher the level of polyunsaturates, the better it is for you. That's why you should use Soyelite. Because it's everything a good cooking oil should be and more.

Soyelite is 100% pure soyabean oil with the vital goodness of soyabean, one of the most nutritious foods known to man. High in polyunsaturates, with no harmful cholesterol. And naturally blessed with an additional essential fatty acid that is missing in groundnut and corn oils.

So remember, whatever else you do to keep your husband healthy and young, begin by cooking with Soyelite.

Soyelite is high in polyunsaturates and contains an additional essential fatty acid not found in Corn Oil, Groundnut Oil and Palm Olein.

**TYPICAL ANALYSIS OF COOKING OILS**

	TOTAL POLY-UNSATURATION	ω 6 ESSENTIAL FATTY ACID	ω 3 ESSENTIAL FATTY ACID
Soyabean Oil	60%	3%	0%
Corn Oil	60%	12%	0%
Groundnut Oil	32%	12%	0%
Palm Olein	12%	12%	0%

+ Contains a balance of both essential health giving fatty acids. ++ Could contain up to 1% due to natural variation. Source: Economic Research Service USA Department of Agriculture.

THE HONEST-TO-GOODNESS COOKING OIL

**SOYA  
 LITE**