



CURRENT STATUS AND NEEDS OF MALAYSIAN FOOD COMPOSITION DATA SYSTEM

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July 2011

*ASEANFOODS Workshop: 18-21 July 2011
Bangkok, Thailand*

BACKGROUND OF MALAYSIAN FCD

- The first comprehensive Food Composition Table in Malaysia was published in 1988 (*Tee et al., 1988*).
- The latest Food Composition Table was published in 1997 (*Tee et al., 1997*). There were a total of 783 foods with limited number of nutrient composition listed in this database.
- However, no updated version of Food Composition Table has been published in Malaysia since then.

PROGRESS OF MALAYSIAN FCD 2011

- Collation and updates of Malaysian Food Composition Database has been identified as one of the Seven Research Priority Areas for Nutrition for Malaysia under the 10th Malaysia Plan (2011-2015).
- Harmonization of the protocol for sampling and methods of laboratory analysis of Malaysian FCD among the participating institutions.
- Increasing the number and scope of nutrients to be analysed.
- Centralized coordination, compilation and documentation of the lab analysis through a web-based system.
- Strengthening the lab capacity of the participating institutions.

NATIONAL TECHNICAL WORKING GROUP (TWG) OF MALAYSIAN FCD

- **Was formerly formed in 2010**

TERM OF REFERENCE

- To coordinate the standardization of the methods for nutrients and non-nutrient analysis of Malaysian food among the institutions.
- To coordinate the documentation and publication of the collation and updates of Malaysian food composition database (FCD) at a regular interval.

MEMBERS OF NATIONAL TECHNICAL WORKING GROUP (TWG) OF MALAYSIAN FCD

- **Ministry of Health** (Institute for Public Health, Institute for Medical Research, Nutrition Division, Food Safety & Quality Division)
- **Universities** (Universiti Kebangsaan Malaysia, Universiti Sains Malaysia, Universiti Putra Malaysia, International Islamic University, Universiti Malaysia Sabah, Universiti Malaysia Terengganu, Universiti Teknologi Mara).
- Chemistry Department
- Malaysian Palm Oil Promotion Board (MPOB).
- Malaysian Agricultural Research and Development Institute (MARDI)
- **Professional Body** (Nutrition Society of Malaysia)
- Fishery Department

PLAN OF ACTION OF NATIONAL TWG OF MALAYSIAN FCD 2011

No	Activities	Responsible institutions	Plan of implementation
1.	Preparation and printing of the protocol for sampling and analysis of Malaysian FCD	National TWG of FCD	Oct 2011
2.	Software for Malaysian FCD	National TWG of FCD	Jan-Dec 2011
3.	Collation and updates of Malaysian FCD	All institutions	Nov 2011
4.	To upgrade the lab capacity for nutrient analysis	All institutions	Jan-Dec 2011/ongoing
5.	Analysis plan of food samples according to priority - Raw and processed food analysis for 24 nutrients by Chemistry Department	National TWG of FCD	By August 2011

UPDATES OF MALAYSIAN FCD

- Initiated by Technical Working Groups of Malaysian FCD, lead by Institute for Public Health and Institute for Medical Research
- The updated version of this food composition database will include new nutrients that are essential to human health such as vitamin D, E, K, iodine, selenium and manganese.
- This data will definitely supplement the information in the existing Malaysian and ASEAN food composition databases which can be used as a fundamental data for estimation of vitamin D, E, K, iodine, selenium and manganese intake, recommendations for prevention, treatment and management of nutrition-related diseases.
- It will also include new foods that are highly consumed by the Malaysian population.
- Sampling and analysis using the current harmonised guidelines have started in July 2011.

PROTOCOL FOR SAMPLING AND METHODS OF MALAYSIAN FCD (2011)

Part I: Sampling of foods

Part II:

- Protocol for collection and handling of raw, processed and prepared (food as consumed) food samples

Part III:

- Laboratory methods of analyses

Part IV:

- Food list
- Contain food listing of all the foods to be included in the revised FCD which have been coded as accordingly using extension:
 - R: Revised code - new and 1997 food items which have been given new codes.
 - N: New food items
 - : Without any extension- Food items previously included on Malaysian 1997 FCD.

STATUS AND NATURE OF NATIONAL FCD: 1997



COMPARISON BETWEEN 1997 AND PRESENT VERSION OF MALAYSIAN FCD

No	ITEM	1997	PRESENT (2011)
1.	NUTRIENT INCLUDED	19 nutrients: Energy, water, protein, fat, CHO, Fibre, Ash, Ca, P, Fe, Na, K, Retinol, Carotene, RE, B1, B2, Niacin, C	29 mandatory nutrients:
2.	CODE SYSTEM: NUMERIC/ALPHA NUMERIC	Numeric	
3.	FOOD GROUPS		
4.	SOURCE OF DATA		

STATUS AND NATURE OF NATIONAL FCD: 1997

No.	Name of food	Wt in household measure/lot purchased g	% E.P.	E.P. g	Nutrient composition of edible portions						
					Proximate composition						
					Energy Kcal	Water g	Protein g	Fat g	CHO g	Fibre g	Ash g
1.01 Cereals and cereal products											
101001	Barley, pearl (Beras Belanda) (<i>Hordeum vulgare</i>)	13	100	100.0	335	12.0	9.2	1.3	71.7	3.4	2.4
	1 tablespoon	52	100	112.8	43	1.5	1.7	0.2	9.2	0.4	0.3
	1/4 cup				173	6.2	4.8	0.7	37.1	1.8	1.2
101002	Maize (Jagung), Zea Mays	14	100	100.0	355	13.5	9.2	1.6	69.3	2.0	1.4
	1 tablespoon	222	100	222.1	49	1.8	1.3	0.6	9.5	0.3	0.2
	1 cup				789	30.0	20.4	10.2	153.9	4.4	3.1
101003	Corn flour, maize flour (Tepung jagung)	8	100	100.0	355	12.0	0.5	1.4	85.0	0.0	1.1
	1 tablespoon				29	1.0	0.0	0.1	6.9	0.0	0.1
101004	Corn snack, cheese flavoured (Snak jagung berperisa keju)	10	100	100.0	499	3.1	9.3	24.0	61.4	0.0	2.2
	1 small packet	45	100	45.0	225	1.4	4.2	10.8	27.6	0.0	1.0
	1 medium packet				504	3.7	6.2	25.6	62.1	0.0	2.4
101005	Corn snack, chicken flavoured (Snak jagung berperisa ayam)	18	100	180.0	91	0.7	1.1	4.6	11.2	0.0	0.4
	1 small packet	45	100	45.0	227	1.7	2.8	11.5	27.9	0.0	1.1
	1 medium packet				457	6.3	6.4	18.2	66.9	0.0	2.2
101006	Corn / rice snack, chicken flavoured (Snak jagung/beras, berperisa ayam)	8	100	8.0	37	0.5	0.5	1.9	5.4	0.0	0.2
	1 small packet				526	3.9	5.2	28.8	61.5	0.0	0.6
101007	Corn stick, chocolate flavoured (Snak jagung berperisa coklat)	15	100	15.0	79	0.6	0.8	4.3	9.2	0.0	0.1
	1 small packet				79	0.6	0.8	4.3	9.2	0.0	0.1
101008	Pop corn, durian flavoured ("Pop corn" berperisa durian)	30	100	100.0	114	1.4	2.1	0.2	25.9	0.0	0.3
	1 small packet				360	5.5	0.4	1.0	92.3	0.0	0.8
101009	Coconut powder (Tepung kastar)	9	100	8.6	33	0.5	0.0	0.1	7.9	0.0	0.1
	1 tablespoon				342	11.4	8.8	1.3	73.7	1.7	3.1
101010	Millet (Sekoi), <i>Echinochloa coracana</i>	9	100	8.5	29	1.0	0.7	0.1	6.3	0.1	0.3
	1 tablespoon	140	100	139.6	477	15.9	12.3	1.8	102.9	2.4	4.3
	1 cup				369	10.0	11.8	4.0	71.4	1.5	1.3
101011	Oats, processed, tinned (Oat dalam tin), <i>Avena sativa</i>	6	100	5.7	21	0.6	0.7	0.2	4.1	0.1	0.1
	1 tablespoon	43	100	43.1	159	4.3	5.1	1.7	30.8	0.6	0.6
	1/2 cup										

STATUS AND NATURE OF NATIONAL FCD: 1997

No.	Name of food	Nutrient composition of edible portions											
		Minerals					Vitamins						
		Ca mg	P mg	Fe mg	Na mg	K mg	Retinol µg	Carotenes µg	RE µg	B1 mg	B2 mg	Niacin mg	C mg
1.01 Cereals and cereal products (continued)													
101001	Barley, pearl (Beras Belanda) (<i>Hordeum vulgare</i>)	23	225	2.6	2	73	0	0	0	0.14	0.03	3.4	1.7
	1 tablespoon	3	29	0.3	0	9	0	0	0	0.02	0.00	0.4	0.2
	1/4 cup	12	116	1.3	1	38	0	0	0	0.07	0.02	1.8	0.9
101002	Maize (Jagung), Zea Mays	45	224	2.9	11	76	0	256	43	0.22	0.12	1.7	8.8
	1 tablespoon	6	31	0.4	2	10	0	35	6	0.03	0.02	0.2	1.2
	1 cup	100	498	6.4	24	169	0	569	95	0.49	0.27	3.8	19.5
101003	Corn flour, maize flour (Tepung jagung)	15	155	1.4	11	24	0	0	0	0.06	0.02	0.2	2.4
	1 tablespoon	1	13	0.1	1	2	0	0	0	0.00	0.00	0.0	0.2
101004	Corn snack, cheese flavoured (Snak jagung berperisa keju)	111	114	3.3	483	55	74	117	94	0.06	0.25	0.0	3.9
	1 small packet	11	11	0.3	48	5	7	12	9	0.01	0.03	0.0	0.4
	1 medium packet	50	51	1.5	217	25	33	53	42	0.03	0.11	0.0	1.8
101005	Corn snack, chicken flavoured (Snak jagung berperisa ayam)	14	51	2.6	703	46	49	50	57	0.00	0.00	0.5	1.7
	1 small packet	3	9	0.5	127	8	4	4	10	0.00	0.00	0.1	0.3
	1 medium packet	6	23	1.2	316	21	22	23	26	0.00	0.00	0.2	0.8
101006	Corn / rice snack, chicken flavoured (Snak jagung/beras, berperisa ayam)	7	63	0.8	506	34	65	38	71	0.00	0.07	1.4	1.6
	1 small packet	1	5	0.1	40	3	5	3	6	0.00	0.01	0.1	0.1
101007	Corn stick, chocolate flavoured (Snak jagung berperisa coklat)	29	71	1.4	18	83	54	32	59	0.01	0.10	1.4	3.5
	1 small packet	4	11	0.2	3	12	8	5	9	0.00	0.02	0.2	0.5
101008	Pop corn, durian flavoured ("Pop corn" berperisa durian)	18	71	1.5	282	85	30	146	54	0.05	0.17	0.7	2.9
	1 small packet	6	21	0.5	85	26	9	44	16	0.02	0.05	0.2	0.9
101009	Custard powder (Tepung kastar)	13	11	0.4	117	29	7	0	7	0.00	0.16	4.7	0.0
	1 tablespoon	1	1	0.0	10	2	1	0	1	0.00	0.01	0.1	0
101010	Millet (Sekoi), <i>Echinochloa coracana</i>	440	156	7.5	53	398	0	33	6	0.30	0.05	0.7	0.0
	1 tablespoon	37	13	0.6	5	34	0	3	0	0.03	0.00	0.1	0.0
	1 cup	614	218	10.5	74	556	0	46	8	0.42	0.07	1.0	0.0
101011	Oats, processed, tinned (Oat dalam tin), <i>Avena sativa</i>	3	16	0.2	0	14	0	2	0	0.03	0.01	0.0	0.0
	1 tablespoon	21	122	1.8	3	104	0	14	2	0.20	0.04	0.3	0.0
	1/2 cup												

2011 FCD: A - MANDATORY NUTRIENTS

No.	Nutrient	Unit	No.	Nutrient	Unit
1	Energy	Kcal	19	Ascorbic Acid (Vitamin C)	mg
2	Water	g	20	Thiamin (B1)	mg
3	Protein	g	21	Riboflavin (B2)	mg
4	Fat	g	22	Niacin (B3)	mg
5	Carbohydrate, by difference	g	23	Folic Acid (B9)	µg
6	Total Dietary Fibre, TDF	g	24	Vitamin A (Retinol)	µg
7	Ash	g	25	Carotenoid	µg
8	Calcium, Ca	mg		α-carotene	µg
9	Iron, Fe	mg		β-carotene	µg
10	Magnesium, Mg	mg		Lycopene	µg
11	Phosphorus, P	mg		Lutein	µg
12	Potassium, K	mg	26	Vitamin D	µg
13	Sodium, Na	mg	27	Vitamin E	mg
14	Zinc, Zn	mg	28	Vitamin K	µg
15	Copper, Cu	mg	29	Total sugar (Mandatory for cereal based foods, fruit and beverages)	g
16	Selenium, Se	µg		Sucrose	g
17	Manganese, Mn	µg		Glucose	g
18	Iodine	µg		Fructose	g
				Lactose	g
				Maltose	g

2011 FCD: B - OPTIONAL NUTRIENTS

No.	Nutrient	Unit	Results / 100 g sample
1	Pantothenic Acid (B5)	mg	
2	Pyridoxine (B6)	mg	
3	Cobalamin (B12)	µg	
4	Choline	mg	
5	Biotin (B7)	mg	
6	Fatty acid, total saturated fat	g	
	4:0	g	
	6:0	g	
	8:0	g	
	10:0	g	
	12:0	g	
	14:0	g	
	16:0	g	
	18:0	g	
7	Fatty acids, total monounsaturated fat	g	
	16:1	g	
	18:1	g	
	20:1	g	
	22:1	g	

No.	Nutrient	Unit	Results / 100 g sample
	18:2	g	
	18:3	g	
	18:4	g	
	20:4	g	
	20:5	g	
9	Trans fatty acids	g	
10	Cholesterol	mg	
11	Amino Acid:	g	
	Tryptophan	g	
	Threonine	g	
	Isoleucine	g	
	Leucine	g	
	Lysine	g	
	Methionine	g	
	Phenylalanine	g	
	Valine	g	

STATUS AND NATURE OF THE 1997 MALAYSIAN FCD: CODE SYSTEM

Raw and processed food		
1	01	001
Section no, (1 or 2)		
Food group no (1-14)		
		Food item no

Cooked food			
2	1	1	001
Section no, (1 or 2)			
Sub-section no (1-3)			
		Food group no	
			Food item no

PROPOSED 2011 MALAYSIAN FCD: CODE SYSTEM

Raw and processed food			
R/N	1	01	001
	Section no, (1 or 2)		
	Food group no (1-14)		
			Food item no

Prepared food				
R/N	2	1	1	001
	Section no, (1 or 2)			
	Sub-section no (1-3)			
			Food group no	
				Food item no

FOOD GROUPS OF 1997 MALAYSIAN FCD

SECTION 1: RAW AND PROCESSED FOODS

Food Group	Code
Cereals and grain products	1.01
Starchy roots, tubers and products	1.02
Legumes and legume products	1.03
Nuts, seeds and products	1.04
Vegetables and vegetable products	1.05
Fruits and fruit products	1.06
Sugars and syrups	1.07
Meat and meat products	1.08
Eggs	1.09
Fish, shellfish and products	1.10
Milk and milk products	1.11
Oils and fats	1.12
Beverages	1.13
Miscellaneous	1.14

SECTION 2: COOKED FOODS

		Code
2.1 Traditional Malaysian Kuih	Rice and rice flour based	2.1.1
	Wheat flour based	2.1.2
	Miscellaneous	2.1.3
2.2 Cooked dishes and meals	Cereal based	2.2.1
	Meat dishes	2.2.2
	Fish and sea-food dishes	2.2.3
	Miscellaneous	2.2.5
2.3 Franchised "fast food"	Chicken	2.3.1
	Burger	2.3.2
	Pizza	2.3.3
	Spaghetti	2.3.4
	Sandwiches	2.3.5
	Satay	2.3.6
	Miscellaneous	2.3.7

PROPOSED FOOD GROUPS FOR 2011 MALAYSIAN FCD

SECTION 1: RAW AND PROCESSED FOODS

Food Group	Code
Cereals and grain products	1.01
Starchy roots, tubers and products	1.02
Legumes and legume products	1.03
Nuts, seeds and products	1.04
Vegetables and vegetable products	1.05
Fruits and fruit products	1.06
Sugars and syrups	1.07
Meat and meat products	1.08
Eggs	1.09
Fish, shellfish and products	1.10
Milk and milk products	1.11
Oils and fats	1.12
Beverages	1.13
Miscellaneous	1.14

SECTION 2: PREPARED FOODS

		Code
2.1 Traditional Malaysian Kuih	Rice and rice flour based	2.1.1
	Wheat flour based	2.1.2
	Legume based	2.1.3
	Glutinous rice based	2.1.4
	Tuber based	2.1.5
	Bubur and pengat	2.1.6
	Miscellaneous	2.1.7
2.2 Cooked dishes and meals	Cereal based	2.2.1
	Meat dishes	2.2.2
	Fish and sea-food dishes	2.2.3
	Vegetable dishes	2.2.4
	Miscellaneous	2.2.5
2.3 Franchised "fast food"	Chicken	2.3.1
	Burger	2.3.2
	Pizza	2.3.3
	Spaghetti	2.3.4
	Sandwiches	2.3.5
	Satay	2.3.6
	Miscellaneous	2.3.7

1997 FCD: SOURCES OF DATA

- Sampling of food
- Several sampling methods were used.
 - **Raw food:** 2 food samples were purchased from different outlet and each food was analyzed separately. Analysis of each nutrient was carried out in duplicate.
 - **Processed food:** at least 3 different brands were obtained from different outlets. A composite sample was prepared for duplicate analysis. Mean values were calculated.
 - **Cooked food:** Minimum of 3 samples were purchased from different outlets and analysed individually in duplicate. Mean values are tabulated and calculated.

1997 FCD: METHODS OF ANALYSIS

- All the 4 institutions used common methodologies (AOAC methods, William 1984) with modification made by IMR.

1997 FCD

No	Nutrients	Method of analysis
1.	Energy	Calculation: Protein (4); CHO (4); Fat (9). Unit in kcal
2.	Protein	Analysis of total nitrogen and multiplying by specific factor for food (WHO, 1973).
3.	CHO	By difference: by subtracting the sum of moisture, protein, fat, fibre and ash from 100.

USES OF 1997 FCD

The screenshot shows the nutriWEB Malaysia website interface. The browser address bar displays 'http://www.nutriweb.org.my/searchfood.php'. The website header includes the nutriWEB MALAYSIA logo and the tagline 'Your window to good eating habits and healthy lifestyle'. Navigation links include 'Free Nutrition E-Cards', 'Food Database', 'Healthful Recipes', 'Calories Content', and 'Jobs Bulletin Board'. The main content area is titled 'Malaysian Foods Composition Database' and features a search form with the following details:

- Food Name: roti canai
- Food Section: Raw and Processed

Additional elements include a 'Contact Us' section with a feedback form and a 'NOTE' regarding the requirement for full names and addresses for feedback.

USES OF 1997 FCD

The screenshot shows the search results page on nutriWEB Malaysia. The browser address bar displays 'http://www.nutriweb.org.my/cgi-bin/dbsearch.cgi'. The website header is consistent with the previous screenshot. The main content area displays the following information:

Number of Records : 2

Back to Search

Food Name	Food No	Food Group	Composition
Roti canai (Roti canai)	221023	Cooked Dishes and Meals	Proximate, Minerals, Vitamins
Yellow dhal gravy (serve with Roti canai/Roti telur) (Kuah kacang dal kuning dihidang dengan Roti canai /Roti telur)	221025	Cooked Dishes and Meals	Proximate, Minerals, Vitamins

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ELECTRONIC DATABASE

- Will be developed in stages for data generators, compilers and users
- A web-based system.

2011 software: USERS

ANALYTICAL METHOD USED FOR MALAYSIAN FCD (2011)

ANALYTICAL METHOD USED: PROXIMATE ANALYSIS

No.	Type of nutrient	Methods of analysis	Method Reference	Nature of Sample
1.	Moisture content	Air oven (convection)	AOAC, 1984 Modified method by UKM	Most samples
		Vacuum oven	Doc. No. J04-002 Modified method by MKAK	Food samples containing high protein, sugar and fat contents
		Infra-red	Nielsen S. S., 1994 Modified method by UKM	Cereal and flour based products
2.	Protein	Kjeldahl	Doc. No. J04-004 Modified method by MKAK	Refer to Table 5
3.	Fat	Soxhlet	Doc. No. J04-009 Modified method by MKAK	Wet and dry samples
4.	Total carbohydrate	By difference (calculation)	Doc. No. J04-013 Modified method by MKAK	All samples

ANALYTICAL METHOD USED: PROXIMATE ANALYSIS

No.	Type of nutrient	Methods of analysis	Method Reference	Nature of Sample
5.	Total Ash	Dry ashing	Doc. No. J04-003 Modified method by MKAK	All samples
6.	Total dietary fibre (TDF)	Enzymatic gravimetric method	AOAC Method 991.43, 1991	Total, soluble and insoluble fiber content
7.	Total sugar	Extraction HPLC & RI detector	Wills <i>et al.</i> , 1980 Modified method by UKM	Most samples. Sucrose, fructose, maltose, glucose and lactose
8.	Energy	Calculation	Doc. No. J04-013 Modified method by MKAK	All samples

ANALYTICAL METHOD USED: MINERAL

Item	Type of minerals	Methods of analysis	Method Reference	Nature of samples
1.	Digestion based on food matrix	Dry Ashing	Tee <i>et al.</i> , 1997	Most samples
		Wet Digestion	Sim <i>et al.</i> , 2006	Most samples
		Microwave Digestion	Miller R.O, 1998 Modified method by UMS	All samples
2.	Calcium (Ca) Ferum (Fe) Natrium (Na) Kalium (K) Magnesium (Mg) Copper(Cu) Zinc (Zn)	Atomic Absorption Spectrometer – Flame	Modified method by IMR	All samples
		ICP-MS	Hua Zou & Jiang Hui Liu, 1997 Chamberlain, I <i>et al.</i> , 2000 Baker, S.A. <i>et al.</i> , 1999 Modified method by IMR	All samples

ANALYTICAL METHOD USED: MINERAL

Item	Type of minerals	Methods of analysis	Method Reference	Nature of samples
3.	Selenium (Se)	ICP-MS	Hua Zou & Jiang Hui Liu, 1997, Chamberlain, I <i>et al.</i> , 2000, Baker, S.A. <i>et al.</i> , 1999 Modified method by IMR	All samples
4.	Iodine	ICP-MS	Khalid B. & Fabien B., 2006-2009	All samples
5.	Phosphorus (P)	Spectrophotometry	Tee <i>et al.</i> , 1997	All samples
6.	Manganese (Mn)	ICP-MS	Hua Zou & Jiang Hui Liu, 1997, Chamberlain, I <i>et al.</i> , 2000, Baker, S.A. <i>et al.</i> , 1999 Modified method by IMR	All samples

FAT SOLUBLE VITAMINS

Item	Type of vitamins	Methods of analysis	Method Reference	Nature of samples
1.	Vitamin A (Retinol)	High Performance Liquid Chromatography (HPLC) with UV detector	Tee <i>et al.</i> , 1997	All samples
	Carotenoids	HPLC with UV detector	Tee <i>et al.</i> , 1997	All samples
2.	Vitamin D	HPLC with UV detector	AOAC 995.05, 2000	Infant formulas and Enteral Product
		HPLC with UV detector	Jasinghe, V.J. & Perera, C.O., 2005	All samples

FAT SOLUBLE VITAMINS

Item	Type of vitamins	Methods of analysis	Method Reference	Nature of samples
3.	Vitamin E	HPLC with fluorescence detector	Fairus S <i>et al.</i> , 2006, Cunha S.C <i>et al.</i> , 2006, Nesaretnam K <i>et al.</i> , 2007, Kawakami Y <i>et al.</i> , 2007, Nielsen M.M & Hansen A., 2008 Modified method by MPOB	All samples
		HPLC with fluorescence/UV detector	A.O.C.S, 1990	All samples
4.	Vitamin K	HPLC with UV detector	AOAC 999.15, 2000	Milk and infant formulas

Internal and External Quality

- Every participating laboratory involves in the analysis of nutrients will be tested for competency before engaging with the actual analysis.
- It is a pre-requisite to indicate their laboratory performances in order to minimize inter-laboratories variations; hence producing precise and accurate results.
- Comparisons of results can be made with other participating laboratories to ensure the results are centred on a mean value, not on the extremes of the distribution. The statistics of a normal distribution mean that about 95% of data will lie between $\pm 2SD$.

Internal and External Quality

- The analysis of external quality check sample will be conducted twice a year for certain critical parameters especially the mandatory nutrients (mainly proximates).
- Distributions of blind check samples will be coordinated by Chemistry Department consisting of Proficiency Test (PT) samples and Standard Reference Material (SRMs) provided by Chemistry Department as Quality Control (QC) Coordinator.
- Chemistry Department will assess the results of participating laboratories and submit the assessment report.
- Nevertheless, every individual laboratory should perform their Internal Quality Control to minimize deviations and eliminate outliers.

COLLATION OF MALAYSIAN FCD

PROPOSED CRITERIA FOR COLLATION OF MALAYSIAN FCD

- Food Item
- Method (procedure, sample location, sample size, characteristic of sample, serving size)
- Nutrient Content
- CV ($\leq 20\%$)
- Source of information (reference)
- Date of publication
- Notes: Proximate Analysis-1985 onwards,
- Options: Grey literature
- Contact person

No	Collation criteria
1	Publish/peer reviewed journals using established method
2	Representative sample

PROBLEMS/NEEDS/RECOMMENDATIONS

No	PROBLEMS	NEEDS	RECOMMENDATIONS
1.	FOOD CODE	To harmonize the food codes according to food groups (raw, processed and prepared)	
2.	Non-standardized protocol for evaluation	To standardize the protocol for the collation of the database i.e sampling, sample size, method of analysis, CRM, internal and external quality	Refer to Table 1
3.	Internal and external QC	To standardise Asean reference lab for all nutrients for interlab comparison and QC	
4.	Methods and analysis	To update on the latest and simplified methods of analysis within Asean Countries i.e. DUMAS for protein analysis	

THANK YOU