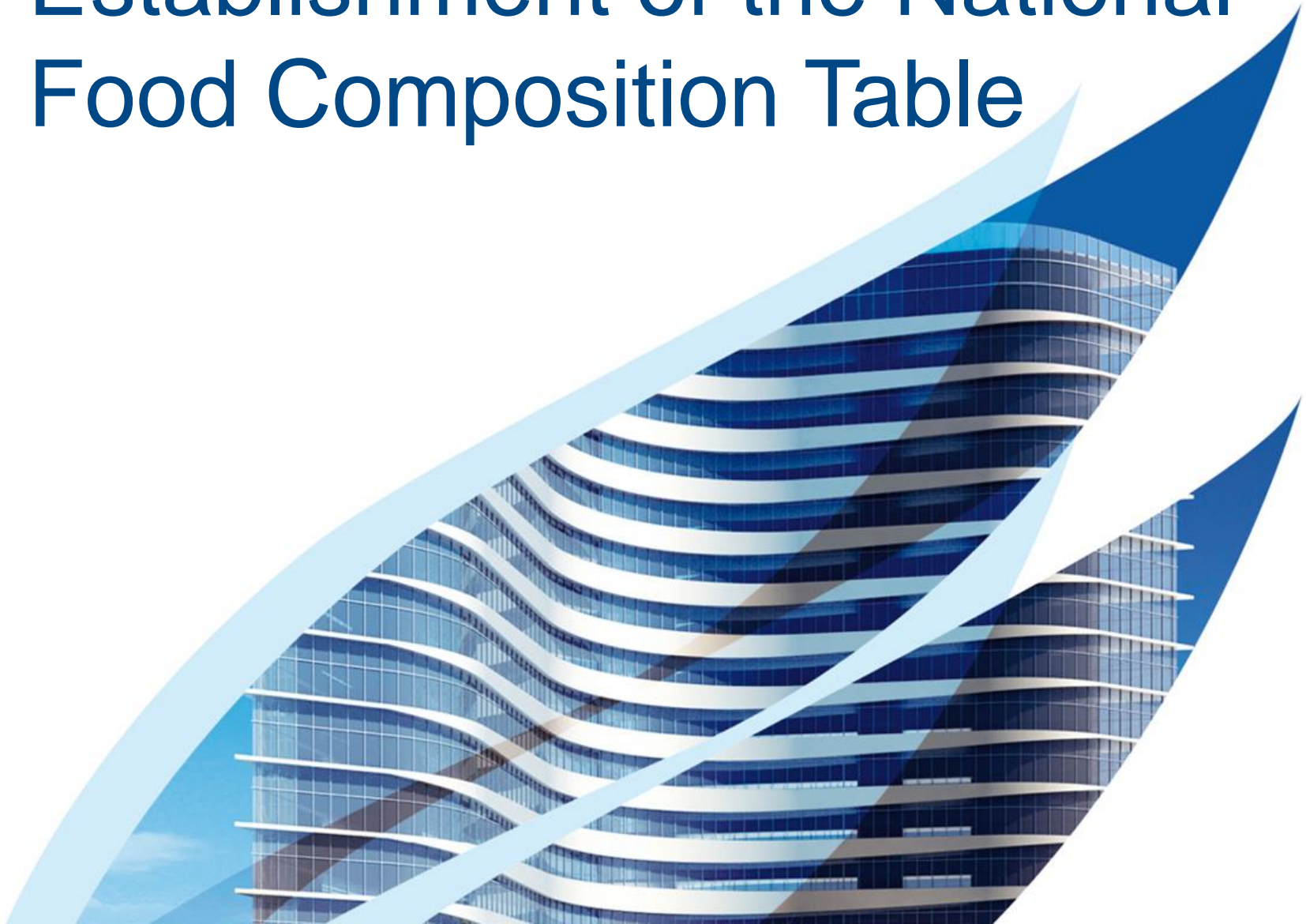


Establishment of the National Food Composition Table



National Food Composition Table

Institution

- Kuwait Institute for Scientific Research (KISR)
- Ministry of Health (MOH)
- Kuwait Institute for Scientific Research (KISR)
- Ministry of Health (MOH)
- Kuwait Institute for Scientific Research (KISR)
- Ministry of Health (MOH)
- Kuwait Institute for Scientific Research
- Ministry of Health (MOH)

Research Team

Phase 1

- N. Eid, F. Abu-Dagga, B. Dashti, F. Hagi, S. Dashti
- F. Al-Awadhi

Phase 2

- W. Sawaya, B. Dashti, S. Khalafawi, T. Al-Ati, S. Al-Zenki, H. Al-Omirah
- F. Al-Awadhi

Phase 3

- B. Dashti, W. Sawaya, H. Al-Amiri, S. Khalafawi, J. Al-Otaibi, S. Al-Zenki, A. Al-Sayegh, B. Mahboob, S. Al-Kandari, L. Al-Sabah, J. Al-Sager, M. Al-Foudari
- F. Al-Awadhi

Phase 4

- H. Al-Amiri, J. Al-Otaibi, M. Al-Foudari, A. Bin Haji, Z. Haji
- F. Al-Awadhi

“A Knowledge of the chemical composition of foods is the first essential in the dietary treatment of disease or in any quantitative study of human nutrition”.

McCanCe and Widdowson (1940)



What are Food Composition Tables?

- **Food composition tables** are resources that provide detailed food composition data on the nutritionally important components of foods.
- **Food composition tables** provide values for energy and nutrients including protein, carbohydrates, fat, fiber, vitamins, minerals, cholesterol, fatty acids, and amino acids profile.

The Importance of the Food Composition Tables

Clinical Practice

- Enable dieticians to analyze diets, develop meals, and plan menus to ensure that patients' nutritional needs are met.

Agricultural Sector

- Ensure that the foods produced provide sufficient nutrients.

Health Educators and Policy-Makers

- Translate nutrient information into messages to the public about foods that promote good health.

Cont'd.

Trade Export and Legislation

- Ensure that the nutrient content of foods and food products do not carry any health risks and in line with specified regulations.

Food Manufacturers and Producers

- Calculate nutrient values for food labeling purposes, and to formulate new products to meet specific nutrient composition.

Researchers


- Enable the analysis of the diet intake data of individuals and populations in order to determine dietary correlates with diseases and their causes, and in nutrition and food consumption surveys.

History of Food Composition Tables in the State of Kuwait

Prior attempts were made to establish nutrient composition tables for composite cooked dishes by Kamel and Allam, 1980; Al-Nasef et al., 1980.



Kamel and Allam (1980) analyzed 35 cooked dishes for their proximate compositions and mineral contents, but no data were reported on vitamins.



Al-Nasef et al. (1980) reported theoretical calculations on the compositions of 62 composite cooked dishes for proximate composition, minerals and vitamins

Evolving Requirements for Food Composition Tables for Kuwait

- The assessment of nutritional status studies carried out among different population segments of Kuwait indicated the deficiencies and limitations of published data on the nutrient content of foods consumed in Kuwait.
- Due to the fragmentary and incomplete information on the nutritive value of Kuwaiti foods, establishing a national food composition table was suggested by KISR in cooperation with MOH.

Objectives

- To assess the nutritive value of commonly consumed Kuwaiti composite dishes prepared and cooked according to local recipes.
- To establish a national food composition table handbook for the Kuwaiti composite dishes.

National Food Composition Table Dishes (Phase1-Phase4)

Phase 1 (16 dishes)		Phase 2 (22 dishes)		Phase 3 (32 dishes)			Phase 4 (37 dishes)		
Machbous Laham	Meaddass	Warag Enape	Rangena	Fish Saneya	Soinach Pastry	Lentil Soup	Samak Maleh	Aish Tomat	Harda
Biryani Laham	Momawash	Mahshi Bil Koosa	Tamrea	Fish Kofta	Cheese Pastry	Rice Koba	Kabab Rubyan	Kushari	Halwa
Dulmah	Marag Addass	Kofta	Elba	Matfee	Cheese sambosak	Burgol Koba	Marag Rubyan	Gerayba	Bakhsam
Harees		Gabbout	Mixed Salad	Khathra	Meat Sambosak	Potato Koba	Shorbat Shareya	Konafa	Madrooba
Jereesh		Muraq Shabzi	Mashkoul	Fried Fish	Thyme Pastry	Labnah	Shorbat Dajaj	Baglawa	Arayes
Margook		Qouzi	Khoubiz Ragag	Shrimp Panee	Vegetable Sambosak	Haloomi Cheese	Shorbat Harees	Gatayef	Kabda Mahmosa
Marag Laham		Tashreeb	Khoubiz	Grilled Shrimp	Mahalbia		Cream Cheese	Samsamia	Keema
Marag Bamia		Biryani	Macaroni Bil Bashamel	Tabola	Legemat		Triangle cheese	Khabeesa	Cheeseburger Sandwich
Machbous Dajaj		Dajaj Bil Furan	Mashkoul Bil Bathengan	Motabal	Sub-Al-Gafsha		Wafra Cheese	Darabeel	Chickenburger Sandwich
Marag Dajaj		Hameset Rubyan		Hommas	Rahash		Aish Muhammar	Zalabia	Hameesat Mushroom
Motabak Samak		Samak Mashwi		Foul Modammas	Chicken Shawerma		Aish Khothra	Aseeda	Hameesat Fagae
Momawash Rebian		Balaleet		Fattoosh	Meat Shawerma		Aish Fagae ma Laham	Heso	Marag Hawa
Marag		Qours		Falafel	Vegetable		Aish Bajella		

Methodology



- Identify foods for food composition table



- Standardization of the recipes



- Preparation of the dishes

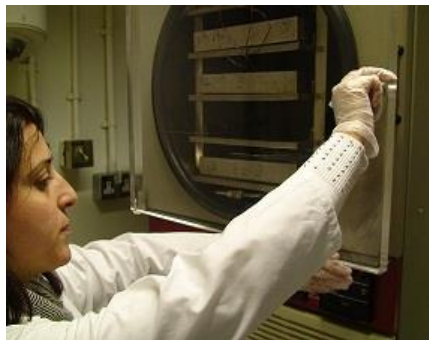
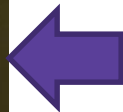


- Preparation of the samples for analysis



- Analysis for chemical composition

Preparation of the Samples for the Analysis



Analytical Methods

Nutrients	Method
Water	Fisher Isotemp vacuum oven
Protein	Kjeldahl procedure with a Kjeltec 1035 auto sampler system
Fat	Soxhlet Extraction System (Soxtec HT 1043)
Fiber	Fibertic System M
Ash	Isotemp Muffle Furnace (Fisher Scientific)
Carbohydrate	Calculation by difference
Dietary fiber	Enzymatic Gravimetric Method using Fibertic System E 1023 Filtration Module
Energy	By calculation from the total grams of protein, fat, and carbohydrate, using Atwater calorie conversion factors

Cont'd

Nutrients	Method
Phytic acid	Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)
Vitamins (A, E, C, B1, B2, Niacin, Pantothenic acid, B6, Folacin, B12, and D)	High Performance Liquid Chromatography (HPLC)
Fatty Acids	Gas Chromatography (GC)
Cholesterol	Gas Chromatography (GC)
Minerals (Sodium, potassium, phosphorus, calcium, iron, magnesium, zinc, copper, manganese, boron, chromium, aluminum and molybdenum)	Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES)

Cont'd.

Nutrients	Method
selenium	Hydride Generation atomic Absorption Spectrophotometry
Iodine	Calorimetric method
Amino Acids	Amino Acid Analyzer (Beckman 121)
Protein Quality	In-Vitro Protein Digestibility (IVPD), Calculated Protein Efficiency Ratio (C-PER) and Protein Digestibility Corrected Amino Acid Score (PDCAAS)

Results

- Proximate composition (moisture, protein, fat, ash, fiber, and carbohydrates), energy, phytic acid, minerals, vitamins, amino acids, protein quality, fatty acids and cholesterol contents for each composite dish were assessed, reported, and tabulated.
- Results of phases 1 and 2 were combined, and a comprehensive food composition handbook for Kuwaiti composite dishes was established.

FOOD COMPOSITION

KUWAITI COMPOSITE DISHES

KUWAIT INSTITUTE FOR
SCIENTIFIC RESEARCH



FOOD AND NUTRITION
ADMINISTRATION



KUWAIT FOUNDATION FOR THE
ADVANCEMENT OF SCIENCE



Summary

- National food composition tables are a result of the combined efforts of KISR and MOH.
- Work was conducted through 4 phases (1989-2005).
- National food composition tables provide information on around 97 nutrients in 107 traditional commonly consumed Kuwaiti dishes, based on recipes collected from household surveys.

Cont'd.

- All the analyses have been conducted according to the Association of Official Analytical Chemists (AOAC) and other standard methods of food analysis.
- Data of phases 1 and 2 were compiled in a “Food Composition: Kuwaiti Composite Dishes” handbook.
- National food composition tables will be highly useful for educational and research activities, health institutions, food manufacturers, and policy makers.

Thank you

The bottom half of the slide features several overlapping, curved, abstract shapes in various shades of blue, ranging from a deep navy to a lighter, almost white blue, creating a dynamic, layered effect.