



Evaluation of Nutrients Content of School Lunch Meal in Taipei



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Abstract

The purpose of this study is to evaluate the nutrients content of school lunch meal in Taipei in 2007. Study was conducted from March 2007 to December 2007. 146 lunch meal was evaluated from primary school, junior high school and high school. There were provided 788 ± 250, 825 ± 454, 874 ± 199 kcal for primary school children, junior high school and high school adolescents, and 29.2, 26.3, 31.7g protein (15.4, 13.0, 14.4% of energy). It could provide 1/3 to 2/5 of dietary reference intake (DRIs) nutrients. There was no significant difference because season's change (no difference exist between spring and autumn), except high protein energy in spring. Most school lunch meal could provide adequate for children and adolescent in Taipei.

Purpose

According to the Department of Health, Executive Yuan, ROC, the lunch boxes which are given to elementary school, junior high school and senior high school should meet the nutrient and calorie needs that the one-third to two-fifth of dietary reference intakes (DRIs). In this experiment, we have two purposes. One is to find out were all these lunch boxes met the DRIs and had the suitable proportion between carbohydrates, proteins fats and other nutrients. The other is to see if there had any differences between spring and autumn lunch boxes' nutrients.

Material and method

The study samples were provided by 110 school meal caterers who were randomly selected by the Food and Drug Administration Department of Health, Taipei City Government. All study samples were analyzed by the School of Nutrition and Health Sciences of Taipei Medical University using the 3-repetition technique. The analytical process started from sorting and weighing the ingredients of meals (weighing of fat content: 5g/ Ex for sautéd or stir-fried food items, 10 g/Ex for deep-fried food items) and the data gained were processed by dietary analysis program for nutrient composition. All ingredients were categorized into 6 food groups and calculated to display the result as mean value.

Results

Table 1. Classify by food guide line

		Staples (portion)	Meats (portion)	Vegetables (portion)	Lipids (portion)
Elementary school	Spring	5.1±1.9	2.9±1.6	1.2±0.6	3.4±1.6
	Autumn	4.4 ± 1.4	2.3 ± 0.9	1.0 ± 0.4	3.9 ± 1.2
Junior High School	Spring	5.0±2.5	2.8±1.1	1.2±0.9	5.0±2.1
	Autumn	5.1 ± 1.0	2.9 ± 1.3	1.0 ± 0.5	4.7 ± 1.0
Senior High School	Spring	4.9±1.0	4.1±2.0	1.1±0.6	4.9±3.6
	Autumn	4.9 ± 1.0	3.8 ± 1.1	1.0 ± 0.6	4.7 ± 2.3

Present in the way Mean±SD.

Table 2. Classify by nutrients and compare the difference between spring and autumn lunch boxes

		Calorie (kcal)	Protein (g)	Protein (%)	Carbohydrates (g)	Carbohydrates (%)	Lipids (g)	Lipids (%)
Elementary School	Spring	788 ± 250	29.2±12.2	15.4±4.7*	103.5±37.3	53.2± 9.8	26.2±11.1	31.3±8.9
	Autumn	777 ± 235	25.2±9.4	13.0±2.7*	105.2±49.9	52.9±10.0	28.3±9.5	34.1±9.9
Junior High School	Spring	825 ± 454	26.3±14.6	12.7±0.1	92.1±39.4	46.5±6.2	38.8±25.9	40.8±6.1
	Autumn	827 ± 159	22.6±7.2	11.0±2.4	108.9±23.0	51.1±9.2	33.6±7.9	38.0±9.0
Senior High School	Spring	874± 199	31.7±12.1	14.4±4.5	102.8±13.5	49.7±13.4	36.9±21.0	35.8±12.7
	Autumn	862 ± 168	28.5±9.2	13.2±2.5	102.6±21.9	48.7±10.8	36.8±13.7	38.2±8.7

1 Present in the way Mean±SD

2 There are no obvious differences between spring and autumn lunch boxes' nutrients except high protein calorie in spring.

Table 2 (con.)

		Fiber (mg)	Dietary Fiber(mg)	Cholesterol (mg)	Vit.B1 (mg)	Vit.B2 (mg)	Ca (mg)	Fe (mg)
Elementary School	Spring	1.5±0.9	5.2±2.6	90.4±86.7	0.3±0.2	0.1±0.2	146.4±125.8	3.9±2.7
	Autumn	1.7±1.7	5.5±3.8	71.2±75.8	0.6±2.6	0.6±2.6	141.2±115.7	3.6±4.0
Junior High School	Spring	1.2±0.6	3.6±0.6	58.8±38.9	0.2±0.03	0.2±0.04	63.8±27.4	2.0±0.8
	Autumn	1.2±0.4	4.3±1.5	54.6±46.2	0.2±0.1	0.2±0.1	113.6±72.9	3.1±2.4
Senior High School	Spring	1.0±0.3	3.9±0.9	128.8±124.5	0.3±0.1	0.3±0.1	106.4±65.3	3.3±1.8
	Autumn	1.1±0.6	3.8±1.3	133.0±105.0	0.3±0.1	0.3±0.1	144.0±84.8	2.7±1.2

1 Present in the way Mean±SD

2 There are no obvious differences between spring and autumn lunch boxes' nutrients except high protein calorie in spring.

Conclusions

Most of the lunch boxes can provide adaptable calorie and nutrients to school kids, but the high oil and low vegetables portion still need to be concerned. Healthy and delicious lunch boxes can promote children's health and prevent chronic disease.