

**CONSUMER USE OF NUTRITIONAL LABELLING:
INDIVIDUAL CHARACTERISTICS,
BEHAVIOURAL AND
ATTITUDINAL
FACTORS**

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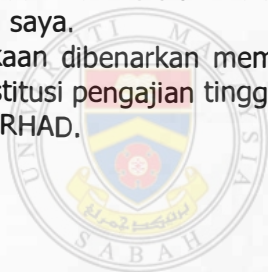
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INDIVIDUAL CHARACTERISTICS, BEHAVIOURAL
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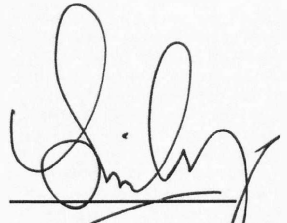
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DECLARATION

I hereby declare that the material in this dissertation is my own except for quotations, excerpts, equations, summaries, and references, which have been duly acknowledged.

2nd June 2008



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ABSTRACT

Reading nutritional labels on food packages may improve food choices and enable healthful dietary practices. This study attempts to identify the usage level of nutritional labelling and to examine the relationship between individual characteristics, behavioural, and attitudinal factors with nutritional labelling usage among consumers in Kota Kinabalu, Sabah. The theoretical framework for this study is adapted from Siu & Tsoi (1998), Nayga (1999) and Drichoutis *et al.* (2005). A structured questionnaire was used to collect information from 222 respondents. The data was analyzed by descriptive statistic, multiple response analysis and multiple linear regression. Of the 222 respondents, 56 respondents (25.2%) claimed that they often use nutritional labelling while grocery shopping, this is followed by 49 respondents (22.1%) who replied always, 46 respondents claimed (20.7%) rarely, 36 respondents (16.2%) said never, and 35 respondents (15.8%) said sometimes. The findings indicate that the usage of nutritional labelling is significantly affected by consumers' level of education, special diet status, smoking status and attitudinal factors (fatthin and contradictory); while age range, gender, being the major grocery shopper as well as the major meal planner and attitudinal factors (dietdisease) do not influence the nutritional labels usage. Understanding the type of consumers and the factors that influence the nutritional labelling usage is crucial for designing effective marketing and nutrition education campaign.

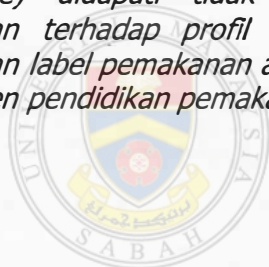
Key Words: Nutritional Labelling, Diet and Disease Trend in Malaysia, Individual Characteristic, Behavioural Factors, Attitudinal Factors.



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Penggunaan Label Pemakanan: Ciri-ciri Individu, Kelakuan dan Sikap

Penggunaan label pemakanan boleh membantu dalam membaiki pemilihan makanan dan mendorong kepada pengambilan makanan yang sihat. Kajian ini dijalankan dengan tujuan untuk menentukan penggunaan label pemakanan dan hubungannya dengan faktor demografik, tabiat dan sikap di kalangan pengguna Kota Kinabalu, Sabah. Teori Rangka Kerja yang digunakan diadaptasi daripada Siu & Tsoi (1998), Nayga (1999) dan Drichoutis et al. (2005). Kaedah utama yang digunakan dalam kajian ini adalah dengan menggunakan kaedah borang soal selidik di mana seramai 222 orang responden telah diperolehi. Data yang diperolehi dianalisis dengan descriptive statistic, multiple response analysis and multiple linear regression. Seramai 56 (25.2%) menyatakan mereka kerap membaca label pemakanan ketika membeli barangan keperluan seharian, diikuti dengan 49 (22.1%) sentiasa, 46 (20.7%) jarang, 36 (16.2%) tidak pernah dan 35 (15.8%) kadangkala. Dalam kajian ini, didapati penggunaan label pemakanan adalah dipengaruhi oleh tahap pendidikan, status pengamalan diet, status merokok dan faktor sikap (fatthin dan contradictory). Manakala umur, jantina, pembeli utama barangan keperluan dapur, perancang utama penyediaan makanan dan faktor sikap (dietdisease) didapati tidak mempengaruhi penggunaan label pemakanan. Pemahaman terhadap profil pengguna dan juga faktor yang mempengaruhi penggunaan label pemakanan adalah penting bagi perancangan strategi pemasaran dan kempen pendidikan pemakanan.



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TABLE OF CONTENTS

Page

TITLE	i
DECLARATION	ii
APPROVAL	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
ABSTRAK	vi
TABLE OF CONTENTS	vii
LIST OF FIGURES	x
LIST OF TABLES	xi
LIST OF APPENDIXES	xii

CHAPTER 1 INTRODUCTION

1.1	Research Background	1
1.2	Problem Statement	2
1.3	Research Objective	3
1.4	Scope of Study	4
1.5	Significant of the Study	4
1.6	Definition of Terms	4
	1.6.1 Nutritional Labelling	4
	1.6.2 Individual Characteristics	5
	1.6.3 Behavioural Factors	5
	1.6.4 Attitudinal Factors	5
1.7	Organization of Report	5

CHAPTER 2 LITERATURE REVIEW

2.1	Introduction	7
2.2	Food Consumption Trends in Malaysia	7
2.3	Diet-related Chronic Non-communicable Diseases in Malaysia	8
2.4	Nutrition Labelling of Food Product in Malaysia	8

2.5	Sample Format for Nutritional Labelling	9
2.5.1	Serving Size	11
2.5.2	The Percent Daily Value	11
2.5.3	Calories	12
2.5.4	Nutrients	12
2.5.5	Daily Value Footnote	12
2.6	The Impact of Nutritional Labelling on Consumer Health	12
2.7	Nutritional Labelling Affect Purchasing Behaviour	13
2.8	Benefits of Nutritional Labelling	14
2.9	Determinants Variables	14
2.9.1	Consumer Use of Nutritional Labelling	14
2.9.2	Individual Characteristics	15
a.	Age	15
b.	Gender	16
c.	Education Level	16
2.9.3	Behavioural Factors	17
a.	Grocery Shopper	17
b.	Meal Planner	18
c.	Special Diet Status	18
d.	Smoking Status	19
2.9.4	Attitudinal Factors	20
2.10	Conceptual Model	21
2.11	Summary	22

CHAPTER 3 RESEARCH METHODOLOGY

3.1	Introduction	24
3.2	Theoretical Framework	24
3.2.1	Dependent Variable	
a.	Nutritional Labelling Usage	25
3.2.2	Independent Variables	
a.	Individual Characteristics	25
b.	Behavioural Factors	25
c.	Attitudinal Factors	25

3.3	Research Hypothesis	26
3.4	Research Design	27
3.5	Unit of Analysis	28
3.6	Sampling Design	28
3.6.1	Location of Study and Population	28
3.6.2	Sampling Technique	28
3.6.3	Sampling Size	30
3.7	Instruments and Measurement Design	30
3.8	Data Collection Method	31
3.9	Data Analysis Method	31
3.10	Summary	32

CHAPTER 4 ANALYSIS OF RESULT

4.1	Introduction	33
4.2	Profile of Respondents	33
4.3	Descriptive Analysis	35
4.4	Multiple Response Analysis	36
4.5	Hypothesis Testing	37
4.6	Summary of Findings	43

CHAPTER 5 DISCUSSION AND CONCLUSION

5.1	Introduction	45
5.2	Recapitulation	45
5.3	Discussion and Implication	45
5.3.1	Discussion	45
5.3.2	Implication	50
5.4	Limitations of Study	51
5.5	Suggestion for Future Research	52
5.6	Conclusion	53

REFERENCES	54
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APPENDIX	61
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LIST OF FIGURES

	Page
Figure 2.1 Nutritional Labelling of a Yeo's Processed Peas	10
Figure 2.2 Nutritional Label for Macaroni & Cheese	11
Figure 2.3 Nayga (1999) Conceptual Framework	22
Figure 3.1 Analysis of Framework	24
Figure 3.2 Sabah Map	29
Figure 3.3 Kota Kinabalu City Centre Map	29
Figure 4.1 Revised Research Framework	38



UMS
UNIVERSITI MALAYSIA SABAH

LIST OF TABLES

		Page
Table 2.1	Foods that Requiring Mandatory Nutrition Labelling	8
Table 2.2	Literature Summary for the Effect of Individual Characteristics, Behavioral, and Attitudinal Factorson Nutritional Labelling Usage	23
Table 3.1	Types of Analysis	32
Table 4.1	Profile of Respondents	34
Table 4.2	Descriptive Statistic of Variable	35
Table 4.3	Result for Multiple Response Analysis (Reason for Using Nutritional Labelling)	36
Table 4.4	Result for Multiple Response Analysis (Reason for Not Using Nutritional Labelling)	37
Table 4.5	Model Summary of Multiple Linear Regression	38
Table 4.6	Result for Multiple Linear Regression	39
Table 4.7	Summary of Hypothesis Result	43



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UNIVERSITI MALAYSIA SABAH

LIST OF APPENDIXES

	Page
APPENDIX A	61
APPENDIX B	65
APPENDIX C	70
APPENDIX D	75
APPENDIX E	78



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CHAPTER ONE

INTRODUCTION

1.1 Research Background

Nutrition plays an important part throughout life. By practicing good eating habits today will lead to more health benefits later in life. Conversely, carelessness about food choices from young on can contribute to many chronic diseases prevalent in later life, including osteoporosis, obesity, high blood pressure, heart disease, certain cancers, gastrointestinal problems and chronic under-nutrition (Whitney & Rolfes, 2005).

The nutrition scenario in the South-East Asian region has changed dramatically in the last two decades. Especially among the urban segments of the community, diet-related chronic disease has been on the rise. In Malaysia, chronic diseases have been accounted for 71% of all deaths in 2002 (World Health Organization, 2003). It is also discovered that, out of 119,000 total deaths reported, deaths related to chronic diseases in Malaysia is amounted to 85,000 (World Health Organization, 2003).

With the increase in these diseases, there has been greater focus on the role of nutrition in addressing these disorders. Consumers are paying greater attention to the nutritional value of their diets while the food industries are also increasing their efforts to improve nutritional value of foods, including increasing concentration of beneficial nutrients. Government agencies have also intensified efforts to promote healthy dietary practices (Cowburn & Stockley, 2005).

Nutritional labelling of foods is one of the strategies implemented to assist consumers into choosing healthier dietary options. Nutritional labelling has received considerable attention in marketing literature due to increasing consumer interest in health and diet issues (Prathiraja & Ariyawardana, 2003). Nutritional labelling is intended to enable informed consumer choices and to stimulate the consumption and production of health products.

Consequently, nutritional labelling has emerged as an important aspect of the study in decision making on food purchasing, both in scientific and the non-scientific literature. Numerous studies on the factors that influence the usage of nutritional labelling have been conducted in the Western world (Cowburn & Stockley, 2005; Drichoutis *et al.*, 2005, 2006; Higginson, 2002; McLean-Meyinnse, 2001; Nayga, 1996,1999,2001; Prathiraja & Ariyawardana, 2003, Satia *et al.*, 2005; Senesi *et al.*, 2006; Shine *et al.*, 1997; Siu & Tsoi, 1998). However, there is a dearth of similar studies in Malaysia (Tee, 1999; Tee *et al.*, 2002) which can be rectify by employing research methods and evidence gathered from the West. By conducting similar research locally, it would provide significant insight into consumer's characteristics, behaviours, and attitudes toward nutritional information carried on food labelling.

1.2 Problem Statement

Diet-related health problems have increased dramatically over the last few years (Mohd Ismail Noor, 1998). The link between diet and diseases such as obesity, diabetes, cardiovascular diseases, hypertension and some types of cancer is a continuing source of debate. The number of hospital admissions due to these diseases increases year by year (Ministry of Health Malaysia, 1997). In view of the fact that health awareness has increased, it is important that the nutrition information provided on label is appropriate and understandable to the consumers, which also affect consumer food choice behaviourss (Mannell *et al.*, 2006).

Nutritional labelling is an important vehicle through which food manufacturers can communicate essential information about the nutritional value and composition of their products. Potentially, this represents a valuable tool to help consumers make informed decisions in regards to their diet and lifestyle (Grunert, 2007). However, it appears that nutritional labelling is not always effective in getting the message across (Shine *et al.*, 1997). There is still considerably insufficient understanding on the role of nutrition in the caution and prevention of nutritional disorders in Malaysia (Tee, 2002).

Generally, consumers will only make better food choices if they understand and use the food labels (Drichoutis *et al.*, 2005). The key question is does consumer in Kota Kinabalu use the nutritional labelling available when buying food? What factors influence and contribute to their using the nutritional labelling available? At present, there is a lack of studies to examine the factors that influence the usage of nutritional labelling among consumers in Kota Kinabalu, Sabah. It is possible to outline the profile of the consumers who do use or do not use nutritional labels, which is a prerequisite to design nutritional labelling regulations, improving public health awareness and enhance the profitability of the food industry.

1.3 Research Objective

The purpose of this study is to understand consumers' practice toward the reading of nutritional labelling. Purposely, the objectives of this study are:

- i. to identify the usage level of nutritional labelling amongst Kota Kinabalu consumers.
- ii. to determine whether individual characteristic (IV) influence the usage of nutritional labelling (DV).
- iii. to determine whether behavioural and attitudinal factors (IV) influence the usage of nutritional labelling (DV).

1.4 Scope of Study

This study looks into the individual characteristics, behavioural, and attitudinal factors that affect the usage of nutritional labelling on food and beverages products. The subjects for this study consists of consumers who purchase food in Kota Kinabalu hypermarket areas.

1.5 Significant of the Study

Nutritional labelling is aimed at providing a mean for conveying information of the nutrient content of a food product, thereby assisting the consumer in the choice of food. It is a method of informing the consumer on the nutritional quality of a food product. Nutritional labelling also provides support to nutrition education activities as it encourages the use of sound nutrition principles in the selection of foods for meal preparation.

The aim of this study is important and beneficial to many sectors especially towards the food industry. Nutritional labelling provides a mean for food manufacturers and retailers to emphasize the nutritional properties of their products to the consumer factually (Cowburn & Stockley, 2005). It encourages the food manufacturer to be more aware of the importance of producing better nutritious food products (Grunert, 2007). As a result, chronic diseases can be reduced gradually in order to produce healthier population in Kota Kinabalu.

1.6 Definition of Terms

1.6.1 Nutritional Labelling

Nutritional labelling is a statement of the level of nutrients on the food label. It is to be a factual statement of the nutritional quality of the food product (Prathiraja & Ariyawardana, 2003). Increasing consumer interest in nutrition in order to reduce and maintain healthy lifestyle has led to an increase in nutritional labelling usage (Shine *et al.*, 1997).

1.6.2 Individual Characteristics

Ippolito & Manthios (1990) reported that individual characteristics influence information search behaviour. For example, previous research suggested that age, gender and education have been found to be the important characteristics that influence nutritional labelling usage (Nayga, 1997,1999; Drichoutis *et al.*, 2005).

1.6.3 Behavioural Factors

Behavioural factor is related to the social science disciplines of anthropology, psychology and sociology, and to some extent, it can be defined as people's social and mental development, behaviour and interpersonal activities (Daniels *et al.*, 2007). Nayga (1996) and Drichoutis *et al.* (2005, 2007) showed that behavioural factors influenced significantly the nutritional labelling usage among consumers in Greece.

1.6.4 Attitudinal Factors

An attitude is a person's enduring favorable or unfavorable evaluations, emotional feelings, and action tendencies toward some object or idea (Shine *et al.*, 1997). Consumers who believe nutrition is vital in life will have a positive attitude towards nutritional labelling usage.

1.7 Organization of Report

This study comprises of the following chapters that will be included in this research. The summary and organization of the chapters are as follows;

Chapter 1: Introduction

The purpose of this chapter is to present the research background, problem statement, research objective, scope of study, significance of the study and finally the definition of terms used in this study.

Chapter 2: Literature Review

This chapter reviews the knowledge of issues and terminologies within the field of this research.

Chapter 3: Research Methodology

The purpose of this chapter is to explain the method that will be used in conducting this research. A theoretical frame followed by research hypothesis, research design, unit of analysis, sampling design, instrument and measurement design, data collection method and finally data analysis method will be presented in Chapter 3 for this research.

Chapter 4: Analysis of Result

This chapter will review the profile of the respondents followed by the research results and findings.

Chapter 5: Discussion and Conclusion

The last chapter will review the interpretation of data, discussion of the results, contributions of the study, limitations and suggestions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter presents the reviews on the key areas related to the topic of this research. The key literature review focuses on nutritional labelling, Malaysian Food Labelling Regulation, diet and diseases trend in Malaysia, as well as the independent variables such as individual characteristics, behavioural and attitudinal factors.

2.2 Food Consumption Trends in Malaysia

Mohd Ismail Noor (2002) stated that income and population growth, coupled with changes in lifestyle, have increased the demand for food and induced changes in food habits, food purchasing, and consumption patterns. This has been supported by Popkin *et al.* (2001) who stated that when a population undergoes massive social and technological change that includes urbanization, their food supplies will change and therefore affecting their diet. According to the Food and Agriculture Organization (FAO), the intake pattern of calories increased from 2430kcal per person per day in 1960 to 2990kcal in 1997, protein from 49g per person per day to 61g, and fat from 49g per person per day to 87g, respectively. It also revealed that, from 1961 to 1997, the amount of calories obtained from cereals decreased from 61% to 41%; meanwhile, calories from meat, eggs and fish increased from 6.2% to 14.3%, sweeteners from 9.5% to 18%, and oils and fats from 11.4% to 14.8%, respectively (cited in Mohd Ismail Noor, 2002). Mohd Ismail Noor (2002) also observed that the shift towards an affluent diet is consistent with the increased of national wealth.

2.3 Diet-related Chronic Non-communicable Diseases in Malaysia

There is a definite change in disease patterns in Malaysia from the more traditional public health concerns, including undernutrition and infectious diseases, to other chronic and non-communicable diseases such as cardiovascular heart disease, diabetes mellitus, hypertension and certain types of cancer (Mohd Ismail Noor, 2002). Cardiovascular disease, followed by cancer and stroke, are among the leading causes of death, illness and disability in Malaysia (Seamic Health Statistic, 2001). Obesity, which relates to an unhealthy diet (Tee, 1999), has been recognised to increased the risk of having these diet-related chronic non-communicable disease. Obesity has been associated with the over consumption of calories and fat (Whitney & Rofles, 2005). Thus, one should be more prudent about their nutritional status to ensure that the development and progression of chronic diseases are constrained.

2.4 Nutrition Labelling of Food Product in Malaysia

In some countries, such as the United States, it is compulsory to put nutrition labels on processed food (Baltas, 2000). This information is regulated by law to meet certain conditions and follow a standardized format. Recognition that dietary habits can reduce the risk of chronic diseases and improve health has led to the emphasized and enforcement of nutritional labelling in Malaysia since March 2004 (Ministry of Health, 2006). However, there is currently no mandatory nutrition labelling of foods in Malaysia (Tee, 1999), except for regulations pertaining to the labelling of 'special purpose foods' (Table 2.1). The Malaysian Food Regulations 1985 provides for obligatory nutrition labelling of foods such as infant formulae and cereal-based foods for infants and young children. These foods are to be labeled with the energy, protein, carbohydrate, fat, vitamin and mineral contents (Williams & Caliendo, 1994).

Table2.1: Foods that Requiring Mandatory Nutrition Labelling

Regulation No	Food Category	Types of food
64-75	Prepared cereal food and bread	Prepared cereal food (including breakfast cereals), bread (white bread, fruit bread, milk bread, meal bread, rye bread, wheat-germ bread, wholemeal bread, enriched bread)

(cont) Table2.1: Foods that Requiring Mandatory Nutrition Labelling

Regulation No	Food Category	Types of food
84-87, 89-99 & 113	Milk product	Skimmed milk or skim milk or non-fat milk or separated milk, pasteurized milk, sterilized milk, ultra high temperature milk or U.H.T milk, flavored
84-87, 89-99 & 113	Milk product	milk, full cream milk powder or dried full cream milk, skimmed milk powder or skim milk powder or dried non-fat milk solids or separated milk powder, malted milk powder, recombined milk, reconstituted milk, evaporated milk or unsweetened condensed milk, condensed milk sweetened, condensed milk, filled milk powder, evaporated filled milk/ unsweetened condensed filled milk, condensed filled milk/ sweetened condensed filled milk, cultured milk/ fermented milk
135	Flour confection	Any pastry, cake, biscuit/ other product prepared from a mixture of flour/ meal and other food
149, 151, 161 & 220	Canned meat, fish and vegetable	Canned meat, canned meat with other food, canned fish, canned vegetable
233-242	Canned fruit and various fruit juices	Canned fruit, canned fruit cocktail, fruit juice (apple juice, grapefruit juice, lemon juice, lime juice, orange juice, passion fruit juice, pineapple juice)
344-345	Salad dressing and mayonnaise	Salad dressing (including tartar sauce), mayonnaise
348-358	Soft drink	Syrup, fruit syrup/ fruit cordial/ fruit squash, flavored syrup/ flavored cordial, fruit juice drink, fruit drink, flavored drink, soft drink base/ soft drink permix, botanical beverage mix, soy bean milk, soy bean drink

(Source: Laws of Malaysia, Food Act and Regulations 1985, 2004; page 56)

2.5 Sample Format for Nutritional Labelling

The purpose of nutrition labelling is to provide information on food products to reinforce healthy eating practices and support consumers in their efforts to improve their food choices (Siu & Tsoi, 1998). Nutrition labelling provides information about the number of kilocalories and the amount of proteins, carbohydrates, fat and certain other nutrients in a food product (Williams & Caliendo, 1994).

There are, however, a number of products in the market with voluntary nutrition labelling in Malaysia (Tee *et al.*, 2002), most of which are imported foods but there is no uniformity in the various formats used in nutrition labelling. Some of these labels are very brief, with only a few nutrients, whereas others go to the full extent of listing over 15 nutrients. Some are expressed as per 100g (or per 100ml) whereas others refer to amounts per serving. Some of the labels express the amounts in relation to recommended daily intakes (RDI) or recommended dietary allowances (RDA) (Ministry of Health Malaysia, 2006).

In Figure 2.1, the nutritional labelling format consist of mandatory nutrients is commonly found in Malaysia's food and beverage products. Figure 2.2 is the format for nutritional label that is recommended by Codex Alimentarius and Food and Agriculture Organization (FAO) which is widely use in the Western's products although some of the Malaysian products adopted the same format. This label is composed of five sections as shown below.

Figure 2.1 : Nutritional Label of a Yeo's Processed Peas

Nutrition Information		
Serving Size : 142g		
Servings Per Can : 3		
	Per 100g	Per Serving
Energy	123 kcal	58.21kcal
Carbohydrate	23g	10.88g
Protein	7.0g	3.31g
Fat	0.3g	0.14g
Dietary Fibre	7.0g	3.31g

(Sample labelling by Yeo's Canned Food,
Yeo Hiap Seng (Malaysia) Berhad.
7 Jalan Tandang, Petaling Jaya, 46050, Malaysia)

Figure 2.2: Nutritional Label for Macaroni & Cheese

Sample label for
Macaroni & Cheese

Nutrition Facts	
Serving Size 1 cup (228g)	
Servings Per Container 2	
Amount Per Serving	
Calories 250	Calories from Fat 110
	% Daily Value*
Total Fat 12g	18%
Saturated Fat 3g	15%
Trans Fat 3g	
Cholesterol 30mg	10%
Sodium 470mg	20%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	
Vitamin A	4%
Vitamin C	2%
Calcium	20%
Iron	4%

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

(Source: <http://www.cfsan.fda.gov/~dms/foodlab.html>;
Cited in Food and Drug Administration (FDA), 2004)

2.5.1 Serving Size

Serving size information sits at the top of the nutritional labelling. A package's serving size is extremely important since the rest of the nutritional information on the label is based on serving size (Whitney & Rofles, 2005).

2.5.2 The Percent Daily Value

The Percent Daily Value (% DV) is located on the outer right-hand side of the label. It notifies whether the food contains a high or low level of a specific nutrient based on a 2000 calorie reference diet. The % DV can be a useful tool in comparing different brands in order to make the healthiest choices since one can easily compare the nutritional differences (Food and Drug Administration, 2004).