

## BENEFITS OF FOOD COMBINING METHOD: IS IT REAL?

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### ABSTRAK

Food Combining Method (FCM) adalah suatu metode penurunan berat badan (diet) yang cocok dengan fungsi badan manusia. Prinsip dasarnya mirip dengan perilaku diet yang sudah terkenal di Indonesia, 4 sehat dan 5 sempurna, hanya saja FCM dimodifikasikan dengan mempertimbangkan siklus pencernaan manusia (Gunawan, 2009). Prinsip dasar FCM adalah mengkonsumsi makanan sesuai dengan siklus pencernaan dan kategori makanan yang mengandung asam basa. FCM diharapkan dapat mengarahkan para individu yang berniat diet sesuai dengan perilaku makan, yang mana dapat meningkatkan kesehatan dan stamina.

Penelitian ini bertujuan untuk mencari bukti bahwa faktor dari FCM, yaitu; siklus pencernaan manusia, dan kategori makanan yang mengandung asam basa, memberikan dampak terhadap kesehatan dan stamina. Penelitian ini fokus kepada 3 lokasi fitness center di daerah Serpong, Tangerang. Sejumlah 97 responden, yang berasal dari 3 lokasi fitness center, turut berpartisipasi di dalam penelitian ini.

Hasil yang diperoleh adalah bahwa system pencernaan (DS), dan kategori makanan yang mengandung asam basa (AB) memberikan dampak positif terhadap kesehatan dan stamina. Pada tingkat 69.2%, DS memberikan pengaruh terhadap kesehatan dan stamina. AB memberikan pengaruh sejumlah 28.9% terhadap kesehatan dan stamina. Dengan demikian, para individu yang sedang diet dapat memperhatikan DS dan AB untuk mencapai kondisi kesehatan dan stamina yang maksimal.

Kata Kunci: *food combining method*, siklus pencernaan, kategori makanan yang mengandung asam basa, kesehatan, stamina

### ABSTRACT

Food Combining Method (FCM) is a diet method that is suited with human's natural body function. The basic principle is similar with Indonesia's famous dietetic behavior; 4 Healthy and 5 Perfect, only FCM's principles are adjusted with human's digestion cycle (Gunawan, 2009). The principles of FCM are to eat according human's digestion cycle and acid-base food category. FCM is expected to bring dieters to the natural eating behavior, which can improve health and wellness.

This study would like to prove FCM's factors, which are human's digestion cycle and acid-base food category on its impacts toward health and wellness. This paper will use 3 well-established fitness centers in Serpong area. This study uses 97 respondents from those 3 respective fitness centers.

*As a result, Digestion System (DS) and Acid-Base Food Category (AB) indeed have positive impacts toward health and wellness. With DS shows 69.2% influence towards health and wellness, while AB shows 28.9% influence towards health and wellness. Based on this study, dieters should pay close attention on DS and AB to gain maximum result on health and wellness.*

Keywords: food combining method, digestion system cycle, acid-base food category, health, wellness

## I. INTRODUCTION

Beforehand, there was an old saying, “you are what you eat”. Nowadays, it may sound very cliché but as a matter of fact, food has brought a significant impact for human’s civilization throughout millennia. This significance is proven by the comparison between existence of Homo habilis - Handy Man, the first skilled human 2.3 - 1.4 million years ago and Homo sapiens - us, Modern Human. Throughout these human evolution phases are shown that human’s organs remain the same with the exception on brain’s volume improvement (Kelly, 2005).

This development has brought human into inventions of technologies that were meant to ease their life. As most eras offer to its society, benefits and drawbacks, our era offers things in timely convenience - something instant as benefits. However, something instant - something that is output oriented would tend to create a long-term problem. In this case, the technologies that our society has been developing would include food in its scope.

The results of food technologies are artificial food preservatives and additives. This development indeed solves many time-based-problems and even change people’s dietetic behavior from one part of the world to another (Lupien, 2005). It eliminates the problem of seasonality, it prolongs food shelf life yet maintain original flavor of any food product and it shortens production time. These product developments mostly come in instant food packages. They are widely spread available; moreover, they are widely spread consumed - continuously. As it has been mentioned before, there will be drawbacks occurred. The most visible drawback is human body deficiencies and diseases in long-term period (McCann, et al, 2007).

From the information above can be assumed that food plays a very important role as a part of human development. This, of course refers to a good food consumption behavior. As a reaction, years of efforts has been pushed and developed to overcome and prevent further impacts from these artificial substances’ drawbacks. Moreover, just like how humans can survive for centuries, they solve problems intelligently.

Among various solutions and answers of this problem, Food Combining Method (FCM) came along the way in its uniqueness. Dr. William Howard Hay originally invented it in 1920, but in Indonesia it has been modified and popularized by Mrs. Andang Gunawan. The uniqueness of Mrs. Andang Gunawan method offers is the unnecessary need to calculate calories and even cut down meal’s portion since this method depends on natural digestion system. This uniqueness is distinct from other FCM. Thus, the very need things to do are just know when to eat and what to eat (Gunawan, 2009). Furthermore, this study will elaborate the proper dietetic behavior that has been adjusted according to human’s digestion cycle. The results are human body will reach its ideal weight and maintain its health and wellness by itself. Moreover, this healthy food consumption way still considers

taste as a paramount element.

Unfortunately, healthy food image sounds identical with plain and tasteless food. Another obstacle that is faced is the massive availability of instant food, which has been modified and manipulated with chemical substances. Even worse, instant foods for its consumption and usage have been modified to suit customers' taste and time necessity. So, no wonder these artificial based food products are being consumed continuously by people. Another common image for healthy food is normally seen as a more exclusive and expensive product. Therefore, it makes it even more difficult for this method to penetrate into public.

However, this FCM gives complete guidance to maintain the appetite from healthier method of handling food products to ranges of daily recipes (Gunawan, 2009). After all, maintain good dietetic behavior does not always refer to tasteless food. There is always a way to fight craving from the food our bodies love to hate but love to eat (Brown, 2011). It just needs some different approaches, which are included and defined thoroughly in FCM.

## **II. LITERATURE STUDY**

### **II.1. FOOD COMBINING METHOD (FCM) DEFINITION & PERSPECTIVES**

FCM is originally a natural dietetic behavior that comes from Essen people who lived in Ruhr valley approximately 2,000 years ago (Gunawan, 2009). Scientifically, this method is an evolution from studies of the gastric physiology and the actions of gastric juices and enzymes. It was first developed by Dr. William Howard Hay in 1920s into a dietetic method.

In simple, this method is actually about selecting food carefully to be consumed in order carbohydrate and protein foods are not consumed together in order to get an effective digestion. Basically, mixing certain foods together can cause health issues because different foods require different environments for proper digestion. Mixing carbohydrates and protein together causes the alkaline and acid juices to be neutralized by each other, which greatly increases the time it takes for the food to digest (Matsen, 2008).

FCM takes advantages from human's natural digestion system and foods' acid-base category as its dietetic perspectives. So, FCM process is about to know when and what to eat (Gunawan, 2009).

#### **II.1.1. HUMAN'S NATURAL DIGESTION SYSTEM**

Through extensive research on human's physiological cycle, it has been found that every part of human body has biological activities that works systematically 24 hours non-stop. The digestion process itself has 3 stages based on 3 (three) digestion functions; disposal cycle, absorbing cycle and digesting cycle.

Although these functions work simultaneously, each of these functions works more intensive than in other functions in every 8 hours. At nighttime our energy is focused mainly for absorbing cycle. Thus it is obvious that having supper will not bring any good for human's body and will disrupt body metabolism (Smith, 2012).

- Absorbing cycle, it works intensively between 20.00 and 04.00. During this cycle, the digested foods are being absorbed and distributed evenly to every part of human's body. Within this cycle, human's body should be under a relax state and aided with the

absorbing cycle, cells within the body will regenerate at its best rate during this period (Smith, 2012).

- **Digesting cycle**, it ideally works intensively between 12.00 and 20.00. In this cycle, most of body's energy is allocated for digestion purpose. At this point, it is the appropriate time to get the most nutrition intake (Apriadji, 2009).
- **Disposing cycle**, works at its best between 04.00 and 12.00, most of human's energy will be allocated for it. Thus, undigested food particles are disposed at this cycle. Most people claim that they do not have the appetite in the morning, which is actually something normal. The body does not necessarily need heavy meals like rice or meat during this period because those meals will become more difficult to digest (Gunawan, 2009).

### II.1.2. ACID-BASE FOOD CATEGORY

Based on acid-base level, foods fall into 5 categories, which are; Protein, Starches, Acid, Fat and Sugar. From these categories, there are some set of combinations that are well combined and not well-combined (Gunawan, 2009). The following is an example of the sets of combinations.

**Table 1: Well-suited Food Combination**

		ACID							STARCHES			SUGAR		FATS			PROTEIN			
		Mushrooms	Cow's Milk	Fresh Vegetables	Pickles	Yoghurt	Fresh Tomatoes	Vinegar - Tomato Sauce	Acid-Sub acid Fruits	Corn - Celleriac	Potatoes - Cassava - Taro	Bread - Pasta - Noodles	Sweet Fruits	Honey	Avocado - Olives - Coconuts	Butter - Cream - Cheese	Oils - Fats - Egg Yolk	Nuts - Beans	Cheese	Meats - Poultry - Fish - Egg White
PROTEIN	Meats - Poultry - Fish - Egg White	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Cheese	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
FATS	Nuts - Beans	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Oils - Fats - Egg Yolk	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓
	Butter - Cream - Cheese	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓
SUGAR	Avocado - Olives - Coconuts	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Honey	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Sweet Fruits	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
STARCHES	Bread - Pasta - Noodles	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Potatoes - Cassava - Taro	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Corn - Celleriac	✓	✓	✓	✓	X	X	X	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓
ACID	Acid-Sub acid Fruits	✓	X	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Vinegar - Tomato Sauce	✓	X	✓	X	✓	✓	✓	✓	X	✓	✓	X	✓	✓	✓	✓	✓	✓	✓
	Fresh Tomatoes	✓	X	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Yoghurt	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Pickles	✓	X	✓	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Fresh Vegetables	✓	X	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Cow's Milk	✓	✓	X	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	X	X	✓	✓
Mushrooms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Source: Gunawan, 2009

### II.2. HEALTH AND WELLNESS

Wellness contains 6 dimensions of health, which are; physical, mental, spiritual, intellectual, environmental and social. Since FCM is a diet method, so this study will only

discuss FCM application on its impacts on physical health. In other words, within this study health and wellness will refer to physical health. To become fit it requires a healthy body. There are 4 (four) factors that contribute to acquire a healthy body (Gunawan, 2009); physical functioning, role physical, bodily pain, and general health. In fact, those 4 factors are used to measure a healthy body (Ware, 2000):

- **Physical Functioning (PF)**

PF is related with all physical activities and it ranges from the simplest activities (e.g. bathing or dressing) to the most vigorous activities without limitations due to health. Vigorous activities would come into forms of participating in sports activities or going to the gym.

- **Role Physical (RP)**

RP is related with problems at work or other daily activities as a result of physical health. Role physical in concrete example would be the ability to complete or getting the job done or the frequency of taking sick leaves.

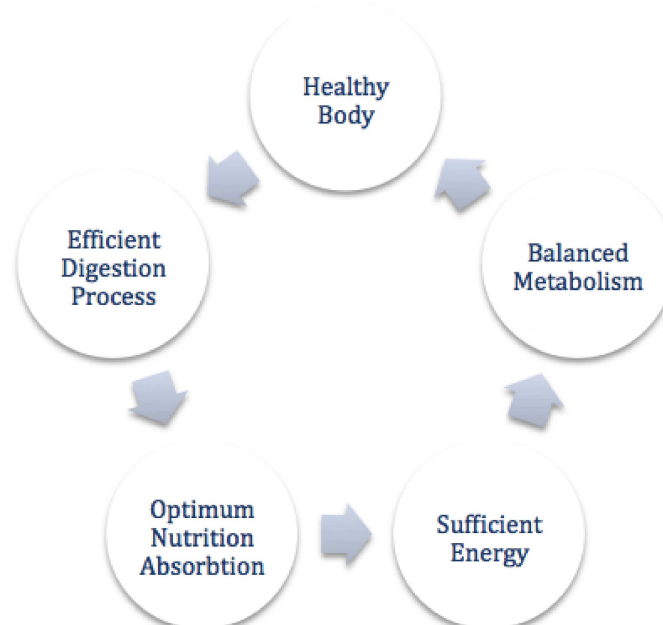
- **Bodily Pain (BP)**

BP means the presence or absence of any physical pains and its affection on work performance.

- **General Health (GH)**

GH would be related to evaluation of a person's physical health rate and a person's believe on his/her future health condition.

**Figure 1: Healthy Body Affecting Factors**



Source: Gunawan, 2009

### II.3. BENEFITS

As it has been mentioned overtime, distinctively different from other methods, FCM allows dieters to eat as much as they can within a certain period of time with certain food categories. The rules that make up the Hay Diet are not only important for accelerating natural weight loss but the diet can also help turn around some degenerative health

conditions (Gunawan, 2009), such as; (1) indigestion, (2) constipation, (3) asthma, (4) arthritis, (5) allergies, (6) body will reach its ideal weight, (7) since digestive process works in efficient way, human's body can save up usage of energy. So, dieters can be more energized and more resistance to sleepiness, (8) efficient digestive process stimulates cells rejuvenation, thus it makes dieters look younger, (9) skins become smoother and healthier, it also could dispel pimples and spots, and (10) hair becomes healthier and smoother.

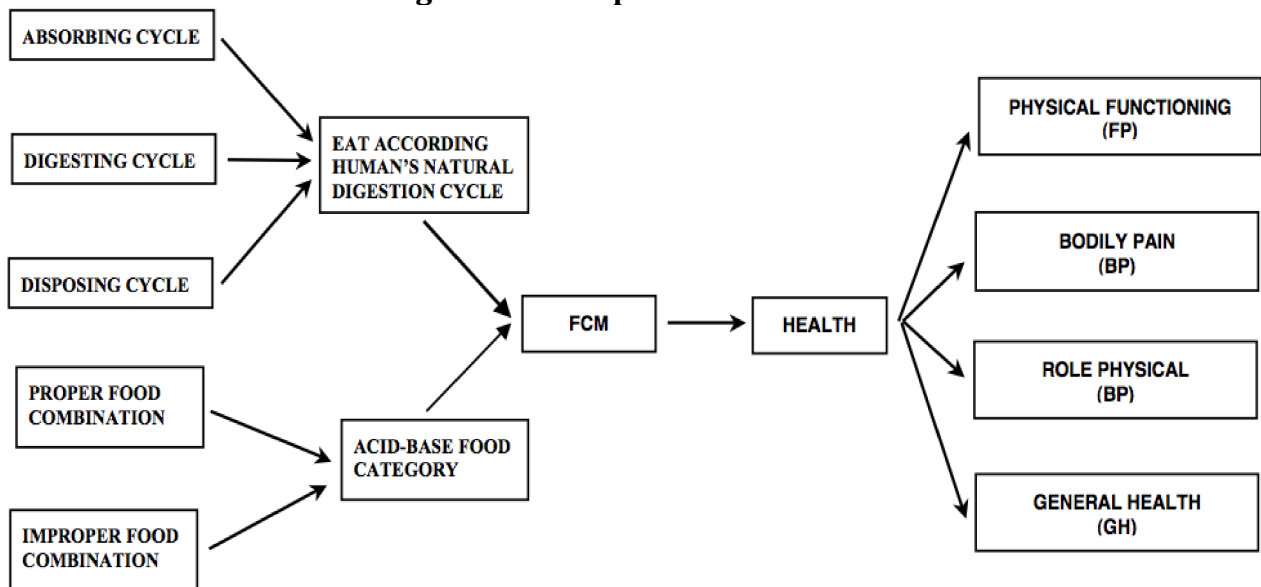
### III. METHODOLOGY

In this research the non-probability, judgment-sampling method is used to evaluate the application of FCM in fitness centers. This research conducted by gathering data from primary sources in well-known fitness centers in Serpong, and the secondary data were taken from the previous related research and supporting literatures. Both quantitative and qualitative analyses being used based on questionnaire. The quantitative approach is being used to present statistical results pertinent to this study, while the qualitative research is being used to conclude the deep understanding about FCM's perspectives influence toward health and wellness. Therefore, it is expected that this studies would bring significances to food service establishments and personal use.

#### III.1. RESEARCH MODEL

The research model in this study is as illustrated in the following diagram. The diagram illustrates the possible influential factors of FCM's perspectives to physical health. It is expected that human's natural digestion system and acid-base food category will show positive improvements. Moreover, it is expected to show how strong each perspective could influence health and wellness.

Figure 2: Conceptual Framework



#### III.2. RESEARCH DESIGN AND IMPLEMENTATION

Research was initially conducted by gathering data from primary sources in well-established fitness centers in Serpong. This study relies on the use of PHStat in determining the sample size. Selecting the sample size determination based on proportion, it is assumed that only 50% of the targeted population are truly represent the intended target of population of this study, limited to 10% maximum error, and maintaining 95% confidence level, it is shown that the minimum numbers of respondents are 97

respondents, as indicated in the following table. The targeted respondents are members who take personal training programs and personal trainers.

**Table 2: Sample Size Determination**

Data	
<b>Estimate of True Proportion</b>	<b>0.5</b>
<b>Sampling Error</b>	<b>0.1</b>
<b>Confidence Level</b>	<b>95%</b>
Intermediate Calculations	
Z Value	-1.95996398
Calculated Sample Size	96.03647052
Result	
<b>Sample Size Needed</b>	<b>97</b>

Source: PHStat

Though the selections of respondents are maintained at random, the mixtures of hotels are chosen due to previous acquaintances. All respondents were distributed a set of questionnaires consisting of 26-questions in regard to: (1) health and wellness, (2) two-perspectives of FCM, which are; human’s natural digestion system and acid-base food category, (3) respondents’ perceptions on FCM taste, and (4) respondents’ perceptions on FCM importance.

The preliminary statistical analyses were evaluated first based on 30 respondents to obtain the pre-testing statistics on those questionnaires. The post-testing and data analyses are immediately followed once the pre-testing statistics indicate satisfactory level of validity and reliability.

#### IV. DATA ANALYSIS

With a total of 97 respondents, all 100% of those respondents are located in Serpong from 3 fitness centers in Serpong, during period of April 2012 to May 2012. Those fitness centers are Gold’s Gym Summarecon Mall Serpong and Celebrity Fitness Teras Kota BSD and Living World Alam Sutera.

The summary of the respondents’ characteristics are as followed;

- From the total 97 respondents, 82 of them were male and 17 were female.
- From the total 97 respondents, 29 of them is between 18 and 25 years old, 52 of them are between 21 and 39 years, 6 of them are 40 years and above, and no respondents are 17 years and below.
- From the total 97 respondents, 52 of them were single, 45 of were married, none of them were separate, and none of them were divorce.

##### IV.1. RELIABILITY AND VALIDITY ANALYSIS

The reliability statistics indicated that the data are considered 94.8% reliable. The reliability statistics appeared to indicate an acceptable degree of reliability.

**Table 3: Cronbach's Alpha Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.948	<b>.948</b>	23

Source: SPSS

With such a satisfactory level of reliability, this signifies that the set of data, which was comprised of 97 responses from 23 different questions, was considered reliable. This means that the data set used in this study can be analyzed further.

To check the level of validity, this study relies on Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy. The range of the result of KMO test might be between 0 and 1. If the value of KMO is lower than 0.5, this means that the sets of data are unacceptable. On the other side, when result of KMO is higher than 0.5, it means the sets of data are acceptable. The Bartlett's Test of Sphericity is used to check whether correlation matrix is an identity matrix to conclude whether the factor analysis is appropriate to use. It can be seen from the result of significant test (Yamin and Kurniawan, 2009). Moreover, from the table below can be seen that the sampling adequacy value is 82.3%, which means it is valid. The other measurement of validity besides sampling adequacy value is significance value. The test result shows of zero significance. It shows lower figure than the alpha value for this study, which is 5%. So this study is considered valid.

**Table 4: KMO and Bartlett's Test**

<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</b>		<b>.823</b>
Bartlett's Test of Sphericity	Approx. Chi-Square	1769.099
	df	253
	<b>Sig.</b>	<b>.000</b>

Source: SPSS

#### IV.2. CORRELATION AND REGRESSION ANALYSIS

Correlation analysis reflects how significant a variable is related with another variable. The result is valued between -1, which stands for inverse correlation and 1, which reflected the perfect correlation. As explained in chapter 3, the value between 0.50 – 0.69 is considered medium correlation and 0.70 until 0.99 is considered as strong correlation (Yamin and Kurniawan, 2009).

**Table 5: Pearson Correlation Analysis**

		<b>DS</b>	<b>AB</b>	<b>H</b>
<b>DS</b>	Pearson Correlation	1	<b>.828**</b>	<b>.931**</b>
	Sig. (2-tailed)		<b>0.000</b>	<b>0.000</b>
	N	97	97	97
<b>AB</b>	Pearson Correlation	<b>.828**</b>	1	<b>.862**</b>
	Sig. (2-tailed)	<b>0.000</b>		<b>0.000</b>
	N	97	97	97
<b>H</b>	Pearson Correlation	<b>.931**</b>	<b>.862**</b>	1
	Sig. (2-tailed)	<b>0.000</b>	<b>0.000</b>	
	N	97	97	97

\*\* . Correlation is significant at the 0.01 level

Source: SPSS, Modified

Based on the above correlation table, the following can be summarized; (1) human's natural digestion system ("DS") and health and wellness ("H") are 93.1% correlated, (2) acid-base food category ("AB") and H is 86.2% correlated, (3) while, AB and DS are as much as 82.8% correlated.



Autocorrelation test refers to test the underlying assumption on regression analysis. This autocorrelation test is aimed to analyze whether or not the dependent variable correlates with itself (Muhidin, 2007). Using the general guidance on the value of Durbin-Watson between -2 and +2, though the results indicate a slight deviation from the upper limit, it is considered satisfactory in fulfilling the guidance (Muhidin, 2007).

**Table 6: Autocorrelation Analysis - Model Summary**

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate	Durbin-Watson
1	.945 <sup>a</sup>	0.893	0.891	0.16474	<b>1.527</b>

a. Predictors: (Constant), AB, DS

b. Dependent Variable: H

**Source: SPSS**

The following ANOVA table describes whether two or more populations are independent in nature and have same average value or not. ANOVA technique will test variability from each group observation and variability of each mean group indicator. Through these two particular variables, conclusion regarding mean population could be drawn.

**Table 7: ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	21.341	2	10.671	<b>393.195</b>	<b>.000<sup>b</sup></b>
Residual	2.551	94	0.027		
Total	23.892	96			

a. Dependent Variable: H

b. Predictors: (Constant), AB, DS

**Source: SPSS**

ANOVA Analysis shows 0.000 as p-value for significance; with significance level of 5%, the p-value is much lower. Therefore, it implies that the data being used are significant. Moreover, from F distribution table; with F (2.94) will show F statistic value of 3.09. It shows that F table value is higher than the F statistic value. Higher F table value and lower p-value than significance level indicate that hypothesis null can be rejected. Moreover, it indicates that DS and AB are useful as predictors for health.

**Table 8: Coefficients - Collinearity Statistics**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.046	0.125		-0.364	0.717		
	DS	0.678	0.059	0.692	11.516	0.000	0.315	<b>3.175</b>
	AB	0.325	0.067	0.289	4.818	0.000	0.315	<b>3.175</b>

a. Dependent Variable: H

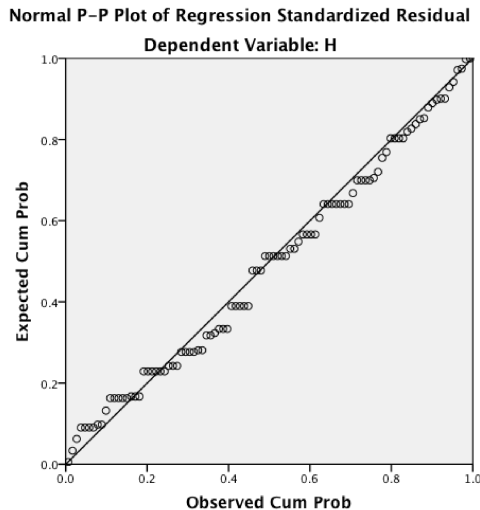
**Source: SPSS**

This is to measure if in the regression model were found any correlation between independent variables. To get excellent regression model, there should be no correlation between the independent variable. If the independent variable is correlated each other, the

variables are consider not orthogonal. This research uses the Value Inflation Factor (VIF) to conduct the multicollinearity test. If  $VIF > 10$ , then it is multicollinearity, if  $VIF < 10$ , there are no multicollinearity (Wijaya, 2009: 119).

To test whether the set of data is normal, graphical illustration can be generated from SPSS. From the following graphical illustration it is apparent that residuals are scattered around the regression line. Hence, it may indicate the normally distributed data.

**Figure 3: Normal P-P Plot of Regression Standardized Residual**



**Source: SPSS**

From the figure above, it can be seen that the distribution of the data are around and along with the diagonal axis. Therefore, it can be said that the regression model for this research is adequately fulfill the normality assumptions.

According to table 8, regression analysis equation can be as interpreted as follow:

$$H = -0.046 + 0.692 DS + 0.289 AB \dots\dots\dots(4.1)$$

Health is the dependent variable, therefore it is affected by Digestion System and Acid-Base Food Category;

- Digestion System contributes 69.2% towards Health for each 1% rise. It could be interpreted that by putting more concern on Digestion System could highly cause positive impacts towards health and wellness development;
- While Acid-Base Food Category represents 28.9% of affection toward Health for its 1% of rise. It means by separating alkali-based foods (such as; steamed rice) with protein-based foods (such as; chicken breasts) will affect almost 30% of human’s health and wellness development.
- Health itself shows a negative value, in which -4.6%. It means that without paying any concern on human’s digestion system and acid-base food category, the level of individual’s health and wellness is at -4.6%. This may be due to the continuously increasing age over time, which diminishes the level of individual’s health and wellness.

### IV.3. RELATIONSHIP WITHIN VARIABLES

#### IV.3.1. RELATIONSHIP BETWEEN DIGESTION SYSTEM AND HEALTH AND WELLNESS

From table 5 and the regression equation, it shows that DS has 93.1% relation with H and has 69.2% impacts toward H. Dieters who eat according to their digestion cycle phases feel positive improvements toward their health and wellness. DS has three phases and each phase allocates most energy in human's body to perform its specific digestion task. For instance, in absorbing phase, human's energy will be allocated to absorb nutrition in food particles. Therefore, if one eats at absorbing phase, nutrition absorption will not be in maximum rate since some energy is forcefully used to digest the food we ate (Apriadji, 2009). Any interference of energy allocation in a specific digestion phase will directly disturb health and wellness development. On a contrary, if dieters eat according digestion phase, it will bring positive improvement toward health and wellness.

#### IV.3.2. RELATIONSHIP BETWEEN ACID-BASE FOOD CATEGORY AND HEALTH AND WELLNESS

From table 5 and the regression equation, it shows that AB has 86.2% relation with H and has 28.9% impacts toward H. The results go align with the theories mentioned in Literature Study. Human has its ideal pH balance, which is 7.3 to 7.5; it tends to alkalic (base) condition. If the pH balance goes below or beyond its ideal balance, it leads to metabolism disruption. Therefore, people should put some concerns on their food's pH balance (Dewanti, 2012).

#### IV.3.3. RELATIONSHIP BETWEEN ACID-BASE FOOD CATEGORY AND DIGESTION SYSTEM

From table 5, DS and AB show 82.8% correlation. As it refers to the basic principle of FCM, health and wellness could be improved as long as concerns are put on when to eat and what to eat (Gunawan, 2009). What to eat implies AB and when to eat implies DS. So, it can be said that the theory stated in Chapter Two is true. Moreover the theory that suggests AB and DS could improve health and wellness has been revealed its truth on two sub-subchapters above; DS as much as 69.2% and AB as much as 28.9% indeed have positive impacts toward health and wellness.

### IV.4. PERCEPTION STUDIES

The perception studies were meant to prove positive responds on two things, which are FCM's taste and FCM's importance. Within the questionnaire, the last 3 questions (24 to 26) are being used to answer this study. This study will use One-Sample T-test, which is a test to compare the mean score of a sample to a known value. Usually, the known value is a population means (Schloesser, 2000). This study uses Likert 4-Scale. Table 9 below provides the corresponding explanations on each of the scale. With such scales, this study aims for the scale of "3" to be the expected positive and most logical responses from respondents.

**Table 9: Likert Scale Indicators**

Scale	Indicator
1	Strongly Disagree
2	Disagree
<b>3</b>	<b>Agree</b>
4	Strongly Agree

#### IV.4.1. FCM'S TASTE PERCEPTION STUDY

The tables below show t-test results on FCM perception on its taste.

**Table 10: One Sample Statistic Table for FCM's Taste**

	N	Mean	Std. Deviation	Std. Error Mean
PTMEAN	97	3.6907	.46460	.04717

Source: SPSS

**Table 11: One Sample T-Test for FCM's Taste**

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
PTMEAN	14.642	96	0.000	0.69072	0.5971	0.7844

Source: SPSS

As shown in the above tables, with the level of significance of 0.000, it means that the average score of responses at 3.6907 is significantly different from the test value of 3. Hence, it is apparent that FCM's taste is significantly different. This is translated into the "FCM offers good taste". Thus, the paradigm of "healthy food is tasteless" can be refuted by FCM.

#### IV.4.2. FCM'S IMPORTANCE PERCEPTION STUDY

The tables below provide t-test results on FCM perception on its importance.

**Table 12: One Sample Statistic Table for FCM's Taste**

	N	Mean	Std. Deviation	Std. Error Mean
PIMEAN	97	3.8351	.25741	.02614

Source: SPSS

**Table 13: One Sample T-Test for FCM's Importance**

	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
PIMEAN	31.951	96	0.000	0.83505	0.7832	0.8869

Source: SPSS

The second column of the output shows the t-test observed value as much as 31.951. The third column shows that this t-test has a total of 96 degrees of freedom with zero significance. From the statistical table, it can be found that the  $t_{table}$  at 96 degrees of freedom,  $\alpha = .05$ , and one-tailed is 1.6609. Since  $\mu \geq 3$  and  $t_{calculated} > t_{table}$ , this indicates that respondents perceive that FCM is important. It is safe to conclude that FCM is considered as an important and necessary tool to create healthy food consumption. This will affect individual's health and wellness.

## V. CONCLUSION AND RECOMMENDATION

### V.1. CONCLUSION

Dr. William Howard Hay discovered FCM back in 1920s. Throughout decades, this method has been developed overtime. However, the principles are the still same, which are

to eat according to human's digestion cycle and to eat according to acid-base food category. This study shows relatively similar result with the FCM theories. In this study, Digestion System cycle and Acid-Base food category indeed show some influence toward health and wellness.

- Digestion System cycle contributes 69.2% impact towards health and wellness. It can be concluded that to maintain a good dietetic behavior with FCM, digestion system takes a bigger portion of influence than acid-base food category does. So the theories about digestion cycle are true that in the morning human's body does not need much food intake since most energy are required for disposing food residuals. While in the afternoon (12.00 - 20.00) is the best time to eat the most since most energy is allocated for digesting in this phase. Moreover, it is also true that heavy meal is not best to be consumed at night (20.00 - 04.00) since most energy is allocated for absorbing food particles (Apriadji, 2009).
- Acid-Base food category shows 28.9% influence towards health and wellness. Although the result shows relatively lower result than digestion system cycle, it does not necessarily mean that attention should be less taken to its account. Hence, one of FCM principles that not to take carbohydrate and protein together has been revealed its truth in this study.
- Based on respondents' data and t - test analysis, FCM is considered as an important tool to escalate health and wellness. Therefore FCM needs to be promoted in public. Moreover, as healthy food is mostly associated with plain and tasteless food, yet FCM as a healthy dietetic method still considers maintaining food's delicacy in any of its dishes.

## V.2. RECOMMENDATION

Based on the conclusion discussion above, there are some recommendations for this research.

- It is suggested that dieters should put a big concern on when will they eat based on digestion system cycle. It is recommended that light foods to be consumed during morning and night only. What considered as light foods are such as fruits, yoghurts or a slice of bread. Light foods are also considered as a replacement of snacks. Examples of menus are attached in the appendices.
- It is highly recommended that dieters should eat according digestion system cycle. Digestion system works in 3 phases and each phase works in different intensity. Hence if concerns are ignored, it is unexpectedly to cause metabolism disruption, which will threat health and wellness.
- Although it is true that human can eat anything he/she wants, however all the foods that come into stomach need specific enzymes to digest them. The more enzymes produced to digest will cause stomach works harder, which could bring imbalances. Therefore, it is also important to pay some attentions on acid-base content in the foods to be consumed.
- FCM is not a mandatory step-by-step of diet; after-all it is just a tool to levitate health and wellness. So, implementing FCM 5 days a week sounds very ideal. Dieters can use the other 2 days to eat freely to prevent boredom or in some certain cases such as

attending some occasions.

- Within this report, there is no discussion on business related issues. However, this study can be useful as guidelines to establish restaurants or any food service establishments that consider selling healthy food products. It starts with Health Ministry of Indonesia's Report 2010; it is shown that obesity rate is 28.5% in Jakarta. This rate is three times higher than malnutrition rate; moreover the cause of obesity here is lifestyle (Setyanti, 2012). No wonder, there seems to be a growing concern on healthy food consumption these days.

As for business this could be an opportunity. As a prove, in first quarter of 2012 Jakarta's Economic Growth Report shows that hotel-restaurant sector shows 7% growth compare to last year (2011)'s first quarter. This contributes the third largest economic growth for Jakarta. So, with higher demand on healthy food trend and positive growth on food industry; FCM may be good for business application. It seems to be promising opportunity for food service establishment.

As a recommendation during fasting period, people are not allowed to eat during the daytime (from 05.30 - 18.00). This means, during the digesting phase the body does not have any food intake. Since the body does not have any food intake, it means that human's digestive organs are put in a rest. This rest causes a natural detoxification, which is regenerating human's body until its cell. So it is suggested that to consume light foods at *sahur* time since at dawn human's body still in the disposing phase. However, if ones feel any difficulties to consume light foods, it is still fine to consume lunch or dinner meals (Apriadji, 2011).

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