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KNOWLEDGE, EXPERIENCE AND USE OF PROBIOTICS AMONG THE UNIVERSITIES AND (PAAET) STUDENTS OF KUWAIT

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ABSTRACT: *The study was conducted to determine the level of general experience and knowledge concerning probiotics in the different institutions in Kuwait, and the survey led to the realizations of varying data. The survey was conducted to a total of four hundred students from two learning institutions through the use of questionnaires. The students interviewed were of different ages, genders, education levels, nationalities as well as attitudes towards the probiotics information. The probiotics are bacteria that are helpful to the body's digestion system and are commonly found in the gut's walls. These bacteria which occur in various forms are present in various food sources such as the milk products as explained in the context. The study also was set to determine the level of awareness concerning the consumption of these bacteria from the interviewers and the relevant data collected. Some of the responses, however, proved that a lot of students are not aware of their consumption of these bacteria as explained in the context.*

KEYWORDS: Probiotics, Survey, University Students, Knowledge.

INTRODUCTION

Probiotics are generally the bacteria, which are mostly found in the wall of the gut, and are considered beneficial in the body. They can help a lot in replacing normal flora of the body when a person loses such bacteria through other means such as taking antibiotics. Some foods such as yogurt and Kefir contain probiotics in large amounts and can be prescribed to a patient when the physician wants the client to benefit from probiotics (Olmstead, 2011). The bacteria have aroused interest in medical researchers after it was discovered that they help in the body digestion. The research can be used to reaffirm whether there are specific beneficial differences between the types. The types range from Lactobacillus to Bifidobacterium. In regard to the mechanism of working, the main principle of the probiotic function is through balancing the beneficial bacteria in the body (Olmstead, 2011). By doing so, the probiotics help in treating different diseases such as diarrhea, treating vaginal yeast infections, reducing the frequency and severity of flu and colds. The current paper will discuss probiotics on various aspects and provide advice on the precautions that should be taken with their use.

The present research seeks to answer the following two main questions:

- What are the knowledge and use of probiotics for the study sample?
- What are the benefits of probiotics from the point of view of the study sample?

Each question contains a number of sub-questions.

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LITERATURE REVIEW

Kinds/Types of Probiotics

Probiotics are mainly known to exist in two main kinds. These are lactobacillus and Bifid bacillus. Lactobacillus inhabits the small intestines of the human gut. The beneficial role of lactobacillus bacteria in the small intestines is that they are involved in the production of the enzyme lactase, an enzyme that is extremely important in the breakdown of milk products into sugars. By helping in breaking milk products into sugars, probiotics the aid the energy production process, which is the process by which milk products become useful in the body. Lactobacillus performs their role through fermentation of sugars, in a process that results in the formation of lactic acid (Olmstead, 2011). The acid is very beneficial in producing and enhancing an acidic environment in the body, whose consequence is two important functions. The first function that is aided by such an acidic environment is shielding the body from unwanted microorganisms that would otherwise be absorbed into the bloodstream through the wall of the small intestine (Kechagia et al., 2013). Secondly, the acidic environment is advantageous in facilitating the absorption of critical minerals such as calcium, iron, and magnesium, among others.

The other kind of probiotics is Bifid bacterium. These bacterial strains inhabit the wall of the large intestine, unlike the Lactobacillus that inhabits the small intestines. Through their lactic acid, Bifid bacterium strains assist in the absorption of minerals, as well as enhancing suppression of other microorganisms, which would, otherwise grow and cause diseases in the body. Bifid bacterium species have many different strains for example Bifid bacterium long that aids in the general digestive process, facilitating detoxification in the body, and enhancing immune health. The other types are Enterococcus, Streptococcus, and pneumococcus (Olmstead, 2011).

How Probiotics Work

While research is ongoing about the mechanism of action of probiotics, it is known that these bacteria achieve their functions through the production of lactic acid. Generally, the two known kinds of probiotics produce lactic acid rendering the walls of the small and large intestines acidic. The acidic wall of the gut is then beneficial in preventing the proliferation of disease-causing microorganism, as well as preventing the absorption of other microorganisms that might cause diseases in the body. Another mechanism of action of probiotics is in aiding digestion (Kechagia et al., 2013). For instance, Lactobacillus species of probiotics produce lactase enzyme, which aids in the digestion of milk products in the body, resulting in sugars that are then ready to be utilized by the muscles through glycolysis for the provision of energy. Arguments about action have also suggested that probiotics achieve their action by balancing the normal flora bacteria in the body.

Probiotic Food Sources

Milk products specifically have proved useful as sources of probiotics as they are able to harbor probiotics for long and enable them to survive through the wall of the gut to their destinations in the small and large intestines (Sanders, 2008). A food such as cheese has been found to harbor important strains of probiotics that can survive in the wall of the gut. People needing probiotics, therefore, can consider cheese as a source if they have no reactions to milk products. The recommended cheeses are the soft ones as they have proven to be better carriers of probiotics (Parvez et al., 2006). The science here is that cheese is hardly enough to act as a

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good environment for developing probiotic cultures. The other milk product that is rich in probiotics is any milk that has been fermented with, or to which acidophilus milk doses have been added (Sanders, 2008). For instance, buttermilk can be cultured using lactic acid, and it will no doubt prove a rich source of probiotics. In addition, when one intends to increase probiotics in their foods, they can easily do so by adding acidophilus milk, and they will increase their intake of probiotics. Still, on milk products, the other food source that is rich in probiotics is yogurt. This food source is highly considered because it is readily available in most parts of the country (Sanders, 2008). The other type of milk product that has been found to help greatly in harboring probiotics is kefir drink.

Tempeh is an Indonesian food that is rich in proteins and is made from fermented soya beans. The food is known to harbor bacteria that are important in the strengthening of the immune system, and these are indeed probiotics (Parvez et al., 2006). Another food source of antibiotics other than milk products is the sour pickles and sourdough bread as it is known to contain probiotics. The other food source is miso soup, a Japanese soup that is made from soya beans. This food has also been found to be rich in probiotics and can be beneficial to a person who is intending to increase their probiotic content.

Probiotics in the Treatment of Diseases

Understanding how probiotics help in regard to disease control, prevention and treatment are important in their application and health. It is indeed without a doubt that probiotics are useful in the treatment and prevention of certain diseases such as diarrhea, irritable bowel syndromes, cramps, ulcers, several infections, and others. Because probiotics have been described as 'good' bacteria, understanding the concept of good and bad bacteria will be helpful in understanding the process by which probiotics keep the body safe from disease-causing microorganisms (Amara &Shibl, 2013). God bacteria, as some like describing them, are those that perform important functions in the gut, such as helping reduce the growth of disease causing bacteria. Probiotics are such good bacteria. One way in which probiotics achieve their function in regard to helping in the prevention and treatment of diseases is through aiding in the digestion of food. While the harmful bacteria may also interfere with the digestive process, the probiotics are beneficial because they help in the correct digestive process (Doron&Gorbach, 2006). By helping in the breakdown of milk to sugars, probiotics facilitate the correct process. The importance of probiotics is critical because other harmful microorganisms can participate in the digestive process and cause an incorrect process which may result in harmful products or even toxins in the body. Therefore, by preventing the proliferation of harmful bacteria that can lead to an incorrect digestive process, and indeed participating in the correct process of digestion, probiotics prevent the body from experiencing intoxication.

The balance between pathogenic and nonpathogenic bacteria has also been used to explain how probiotics assist in the prevention of diseases in the body. Science has shown that pathogenic bacteria, which indeed are not probiotics, thrive well in alkaline and less acidic environments in the gut (Doron&Gorbach, 2006). However, probiotics help in such a situation through the production of lactic acid. Lactic acid promotes the acidic nature of the gut, ensuring that many pathogenic bacteria do not thrive. Instead, the acidic environment enhances the thriving of probiotics such that the normal functions of digestion and protection of the gut wall are restored, and disease is prevented.

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Apart from the production of lactase in regard to enhancing infection control in the gut, there are other ways in which probiotics work to keep the body safe. These ways are also, in some way, related to the goal of suppressing pathogenic microbes in the body. For instance, probiotics are known to produce antimicrobial compounds in the body, which counter harmful microbes in the body such that the numbers of other microbes become reduced tremendously in the presence of probiotics (Doron&Gorbach, 2006). The other way in which probiotics protect the body from disease is through the action of binding. As it is known, there are some pathogenic microorganisms that compete for binding sites on enzymes and other body molecules and reduce the binding activities that are important for the body functions. Research shows that probiotics are important in stimulating immunomodulatory cells whenever there is a foreign substance in the body such that these molecules can bind the substance and remove it from the body. One good example in regard to binding is in the prevention of diarrheal disease by the probiotics. According to Amara and Shibl (2013), probiotics prevent people from diarrhea by competing with diarrhea-causing pathogens and preventing them from binding the epithelial cells of the gut wall. In the prevention of Helicobacter pylori infections, the probiotics usually invade a colony of H. pylori and prevent them from proliferating, hence stopping the effect of the harmful bacteria in the body. It is for this reason that probiotics can be very helpful in situations where H. pylori infections are found to be resistant to antibiotics. Their role in inducing cells has also been associated with their property of reducing cytokines. Indeed, it is important to understand that probiotics also protect the gut wall by regulating the production of mucus in the gut wall, so that the mucus produced is just enough.

Apart from preventive measures, the role of probiotics in the treatment of actual disease has been noted. For instance, probiotics have been very helpful in the treatment of lactose intolerance, a genetic disease. When a lactose intolerant patient is given probiotics of the Lactobacillus type, they record a reduction of certain symptoms associated with this condition, such as cramps, diarrhea, and flatulence (Doron&Gorbach, 2006). The role of probiotics in such other conditions like ulcerative colitis has also been noted. Indeed, the common treatment of this condition has been a resection of part of the intestinal loop. However, it has been noted that the use of probiotics can help to treat this disease and prevent the events of surgery such as cutting some loop of the intestine of a patient.

Probiotic Food Sources and Supplements Comparison

The food sources of probiotics are superior to vitamin complex supplements that are sold as probiotic supplements. Indeed, the supplements, which are made mainly for the purpose of providing probiotics, cannot match the nutritional value that food sources of probiotics offer. One major difference between supplements and food sources of probiotics is in regard to prebiotics. Prebiotics are molecule foods that are necessary for the sustenance of probiotics (Farnworth, 2008). While probiotic foods such as yogurt and kefir are rich in both probiotics and prebiotics, supplements are only rich in probiotics. Because of these properties, the food sources of probiotics are able to reach the large and small intestine destinations in good numbers as compared to supplement sources that have no prebiotics. The other aspect is in regard to the process through which these two products are made. Unlike in supplements, the fermentation process ensures that the bacteria probiotics are live and active as one takes them. The pre-digestion enhances bioavailability of the microflora in the intestines.

The food sources of probiotics are also important in the sense that they contain more varieties of probiotics. Indeed, some may contain even yeasts. However, probiotic supplements may only contain one a single bacteria, which may not be very helpful to a patient. Apart from

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supplements which may be damaged by the acidic nature of the alimentary canal, the fermented probiotic food sources are resistant to the acid-lined gut wall (Farnworth, 2008). This is another important property of probiotic foods that make them superior to probiotic supplements.

Precautions in Probiotic-Use

Because of their therapeutic value, probiotics, just like other therapeutic substances have some precautions. A major precaution that is even more common to other therapeutic substances is an allergy. For a person who is allergic to a probiotic substance, it is not advisable to use probiotics. The other precaution that comes with probiotic use is in relation to women's issues. When a person is pregnant, planning to be pregnant or is breastfeeding, it is not advisable to use a probiotic, especially the supplements (Amara, &Shibl, 2013). The probiotics are also highly restricted in instances when a person is using prescription drugs. Whether the prescription drugs are herbal or non-herbal, a person should not use probiotics as long as they are taking those other drugs. The other precaution with the use of a probiotic is that the supplement is a prescription drug. In that regard, it is important to make sure that one takes the supplement as recommended by the doctor, without compromising the dosage requirements. Further, in regard to the use of probiotics, it is important to consider the age of the person who is to take them. For instance, many probiotic supplements are suitable for children. This means that giving children probiotics meant for children can be harmful to them.

Methodology

The survey was conducted aiming at collecting the relevant information from the university students. The survey was conducted by the use of questionnaire administration which had the necessary questions that the respondents had to answer. The exercise ensured that the set questions would give an opportunity to varying answers.

There were a total number of four hundred students that were questioned using these methods and the exercise covered two institutions (Kuwait University and the public authority institution). There were two hundred and eighty responses gathered from the Kuwait University while the remaining responses were from public authority institution. The questionnaire was cut down into three parts which included the first portion of general knowledge where the question that involved general information was issued. The second portion involved the knowledge of intake choices that were preferable to those being question. Their limited choices were confirmed or otherwise by ticking the boxes or not. The third portion included the different feelings towards the options given and once again, the choices were limited.

Results Analysis

The information concerning study sample was first classified into different categories such as age, nationality, marital status and much more than data of their classification was recorded in frequencies than the percentage variables. This criterion was repeated in the other two divisions of the questionnaire as scheduled. The data was recorded in the table form according to the information gathered from the two institutions. The table below shows the statistics of the participants involved in the exercise.

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Table 1. Participants involvement in the exercise

Variable		Frequency	Percent
Gender	Male	141	35.3
	Female	259	64.8
Nationality	Kuwaiti	324	81.0
	others	76	19.0
Age	17 - 20 years	265	66.3
	21 - 24 years	109	27.3
	25 - 29	26	6.5
	30 - 34 years	0	0.0
	35 - 40 years	0	0.0
Education level	Diploma	393	98.3
	University	7	1.8
Academic year	First	209	52.3
	Second	94	23.5
	Third	47	11.8
	Fourth	50	12.5
CGPA	3.5 and above	21	5.3
	3.0-3.49	69	17.3
	2.50-2.99	66	16.5
	2.0 -2.49	34	8.5
	Less than 2.0	26	6.5
	Not answered	184	46.0
Marital Status	Single	351	87.8
	Married	35	8.8
	Divorced	7	1.8
	Others	7	1.8
No. of children	no children	378	94.5
	1 child	14	3.5
	2 child	6	1.5
	3 children	2	0.5

ISSN 2056-5798(Print), ISSN 2056-5801(online)

Work Status	Work	33	8.3
	Don't work	367	91.8
Place of work	Public sector	119	29.8
	Private sector	12	3.0
	Not answered	269	67.3

The opinions that were achieved in the two institutions were first grouped into the various participants than the average data for the two institutions gathered and recorded into the charts. This now would lead to an easier identification of the responses given for each of the group of questions. The first case study was based on the opinions delivered from the Kuwait University combined with the second institution.

Results of the first question

What are the knowledge and use of probiotics for the study sample?

This question contains a number of sub-questions; here are the results of each question:

1. Do you consume dairy products?

The results showed that (48%) of the study sample consume dairy products continuously, and (42%) of the sample consume dairy products for some time, while (10%) of the sample do not consume dairy products.The following table shows these results.

Table 2.Answers of the study sample on consuming dairy products

Answers	Frequency	Percent
Yes	192	48.0
No	40	10.0
Sometimes	168	42.0

2. How often do you consume dairy products?

The results showed that (37.8%) of the study sample consume dairy products more than three times a week,(25%) of the sample consume dairy products once a week, (19.8%) of the sample consume dairy products three times a week and (17.4%) of the sample consume dairy products twice a week. The following table shows these results.

Table 3. Answers of the study sample on how often they consume dairy products

Answers	Frequency	Percent
Once a week	100	25.0
Twice a week	70	17.4
Three times a week	79	19.8
More than three times a week	151	37.8

ISSN 2056-5798(Print), ISSN 2056-5801(online)

3. What part of the day do you consume dairy products?

The results showed that (55.3%) of the sample did not have a preferred time to consume dairy products,(35%) prefer to consume dairy products in the morning and (9.8%) of the sample prefer to consume dairy products in the evening. The following table shows these results.

Table 4. Answers of the study sample on what part of the day they consume dairy products

Answers	Frequency	Percent
In the morning	140	35.0
In the evening	39	9.8
I have no favorite time	221	55.3

4. What are your favorite milk products?

The results showed variance in the answers of the study sample on the favorite milk products. The favored products came in the following order: condensed yogurt (47.0%), butter (39.8%), cream (39.5%), yogurt with fruit (38.75%), ice cream (32.0%), milk (28.8%), cheeses (20.3%), flavored milk (19.8%), and yogurt (15.0%). The following table shows these results.

Table 5. Answers of the study sample on favorite milk products

Answers		Frequency	Percent
Milk	No	165	41.3
	Yes	115	28.8
	Not answered	120	30.0
Flavored milk	No	201	50.3
	Yes	79	19.8
	Not answered	120	30.0
Yogurt	No	220	55.0
	Yes	60	15.0
	Not answered	120	30.0
Yogurt with fruits	No	245	61.3
	Yes	155	38.75
Butter	No	241	60.3
	Yes	159	39.8

ISSN 2056-5798(Print), ISSN 2056-5801(online)

Ice Cream	No	152	38.0
	Yes	128	32.0
	Not answered	120	30.0
Cream	No	242	60.5
	Yes	158	39.5
Condensed Yogurt	No	212	53.0
	Yes	188	47.0
Cheeses	No	199	49.8
	Yes	81	20.3
	Not answered	120	30.0

5. Which of following dairy companies is your favorite?

The results showed variance in the answers of the study sample onthe favorite dairy companies. These companies came in the following order: KDD (80.5%), Activia (38.0%), Nadec (31.8%), Nativia (31.5%), Almarai (21.8%), Al-Safi (19.8%), Kdcow (13.5%) and Nada (10.8%). The following table shows these results.

Table 6. Answers of the study sample on favorite dairy companies

Answers		**Frequency**	**Percent**
KDD	No	78	19.5
	Yes	322	80.5
Kdcow	No	226	56.5
	Yes	54	13.5
	Not answered	120	30.0
Almarai	No	193	48.3
	Yes	87	21.8
	Not answered	120	30.0
Al-Wafra	No	273	68.3
	Yes	7	1.8
	Not answered	120	30.0

ISSN 2056-5798(Print), ISSN 2056-5801(online)

Nativia	No	274	68.5
	Yes	126	31.5
Activia	No	248	62.0
	Yes	152	38.0
Nada	No	263	65.8
	Yes	43	10.8
	Not answered	94	23.5
Alsafi	No	261	65.3
	Yes	79	19.8
	Not answered	60	15.0
Nadec	No	273	68.3
	Yes	127	31.8

6. Which of the following companies has your favorite yogurt?

The results showed variance in the answers of the study sample on the companies that produce their favorite Yogurt. The most important companies came in the following order: KDD (62.3%), Kdcow (29.0%), Almarai (23.3%), Activia (10.8%) and Nada (5.8%). The following table shows these results.

Table 7. Answers of the study sample on favorite yogurt companies

Answers		**Frequency**	**Percent**
KDD	No	151	37.8
	Yes	249	62.3
Kdcow	No	284	71.0
	Yes	116	29.0
Almarai	No	187	46.8
	Yes	93	23.3
	Not answered	120	30.0
Al-Wafra	No	275	68.8
	Yes	5	1.3
	Not answered	120	30.0

ISSN 2056-5798(Print), ISSN 2056-5801(online)

Nativia	No	275	68.8
	Yes	5	1.3
	Not answered	120	30.0
Activia	No	237	59.3
	Yes	43	10.8
	Not answered	120	30.0
Nada	No	257	64.3
	Yes	23	5.8
	Not answered	120	30.0
Alsafi	No	251	62.8
	Yes	29	7.3
	Not answered	120	30.0
Nadec	No	271	67.8
	Yes	9	2.3
	Not answered	120	30.0

7. How would you evaluate your favorite dairy companies?

The results showed variance in the answers of the study sample on the evaluation of the favorite dairy products. Their answers came as follows: Excellent (36.3%), good (25.8%), not good (1.0%) and not good at all (1.0%). The following table shows these results.

Table 8. Answers of the study sample on how they evaluate their favorite dairy companies

Answers	Frequency	Percent
Not good at all	4	1.0
Not good	4	1.0
Average	24	6.0
Good	103	25.8
Excellent	145	36.3
Not answered	120	30.0
Total	400	100.0

ISSN 2056-5798(Print), ISSN 2056-5801(online)

8. In general, would you prefer probiotic-enriched dairy products?

The results showed that (50.0%) of the study sample prefer probiotic-enriched dairy products and (19.8%) of the sample do not prefer probiotic-enriched dairy products. The following table shows these results.

Table 9. Answers of the study sample on their preference for probiotic-enriched dairy products

Answers	Frequency	Percent
Yes	200	50.0
No	79	19.8
Not answered	121	30.3
Total	400	100.0

9. Based upon your knowledge, (which of these companies would you consider has the most probiotics-enriched dairy products)?

The results showed variance in the answers of the study sample on which companies they would consider have the most probiotics-enriched dairy products. The most important companies came in the following order: Almarai (VetalYogurt), (62.0%), KDD (Provita Yogurt) (61.5%),Alsafi (Actimal Yogurt) (60.3%), Almarai (Vetal Milk) (59.0%) and Kdcow (Prolite Yogurt) (56.8%). The following table shows these results.

Table 10. Answers of the study sample on the companies that have the most probioticsenriched dairy products

Answers		Frequency	Percent
KDD Company	Provita Milk	164	41.0
	Provita Yogurt	246	61.5
Almarai Company	Vetal Milk	236	59.0
	Vetal Yogurt	248	62.0
Alsafi Company	Actimal Yogurt	241	60.3
Activia Company	Activia Yogurt	209	52.3
	Activia Milk	219	54.8
Kdcow Company	Prolite Yogurt	227	56.8

ISSN 2056-5798(Print), ISSN 2056-5801(online)

10. What are the Probiotics?

The results showed that (65.0%) of the study sample consider that probiotics are useful bacteria, (2.8%) of the sample consider that probiotics are harmful bacteria, and (2.0%) of the sample consider that probiotics are yeasts. The following table shows these results.

Table 11. Answers of the study sample on the knowledge of Probiotics

Answers	Frequency	Percent
Useful Bacteria	260	65.0
Harmful Bacteria	11	2.8
Viruses	1	.3
Yeasts	8	2.0
Not answered	120	30.0
Total	400	100.0

11. Based upon your knowledge, are probiotics already included in dairy products?

The results showed that (35.3%) of the study sample see that probiotics are included in dairy products, (25.8%) of the sample have no knowledge about the inclusion of probiotics in dairy products and (9.0%) of the sample see that probiotics are not included in dairy products. The following table shows these results.

Table 12. Answers of the study sample on the inclusion of probiotics in dairy products

Answers	Frequency	Percent
Yes	141	35.3
No	36	9.0
I don't know	103	25.8
Not answered	120	30.0
Total	400	100.0

12. Based upon your knowledge, do you think these products have probiotics?

The results showed variance in the answers of the study sample on the products that have probiotics. The most important products came as follows: The main foods came as follows: yogurt (51.0%), milk (34.0%) and soft cheese (32.5%). The following table shows these results.

ISSN 2056-5798(Print), ISSN 2056-5801(online)

Table 13. Answers of the study sample on the products that have probiotics

Answers		Frequency	Percent
Yogurt	Yes	204	51.0
	No	10	2.5
	I don't know	66	16.5
	Not answered	120	30.0
kefir	Yes	95	23.8
	No	36	9.0
	I don't know	149	37.3
	Not answered	120	30.0
Milk	Yes	136	34.0
	No	42	10.5
	I don't know	102	25.5
	Not answered	120	30.0
softcheese	Yes	130	32.5
	No	36	9.0
	I don't know	114	28.5
	Not answered	120	30.0
sourpickles	Yes	117	29.3
	No	43	10.8
	I don't know	120	30.0
	Not answered	120	30.0

13. In which part of the human body probiotics would considered useful?

The results showed that (41.5%) of the study sample see that the probiotics are useful for the digestive system,(12.5%) of the sample see that the probiotics are useful for the small intestine, while the results showed that (13.3%) of the sample have no knowledge about the benefits of probiotics for the body. The following table shows these results.

ISSN 2056-5798(Print), ISSN 2056-5801(online)

Table 14. Answers of the study sample on which part of the human body probiotics would considered useful

Answers	Frequency	Percent
Small Intestine	50	12.5
The digestive system	166	41.5
Large Intestine	11	2.8
I Don't know	53	13.3
Not answered	120	30.0
Total	400	100.0

14. Based upon your knowledge, is it able to find probiotics as supplements?

The results showed that (24.8%) of the study sample see that probiotics are found assupplements, while (10.3%) of the sample see that the probiotics are not found as supplements, while the results showed that (35.0%) of the sample have no knowledge about the presence of probiotics as supplements. The following table shows these results.

Table 15. Answers of the study sample on the presence of probiotics assupplements

Answers	Frequency	Percent
Yes	99	24.8
No	41	10.3
I don't know	140	35.0
Not answered	120	30.0
Total	400	100.0

15. Do you take probiotics supplements?

The results showed that (24.5%) of the study sample take probiotics supplements, and that (39.5%) of the sample do not take probiotics supplements. The following table shows these results.

Table 16. Answers of the study sample on taking probiotics supplements

Answers	Frequency	Percent
Yes	114	28.5
No	158	39.5
Not answered	128	32.0
Total	400	100.0

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16. If yes, how often do you take probiotics supplements?

The results showed that (13.8%) of the study sample take probiotics supplements twice a week, (13.0%) of the sample take probiotics supplements once a week and(3.5%) of the sample take probiotics supplements three times a week. The following figure shows these results.

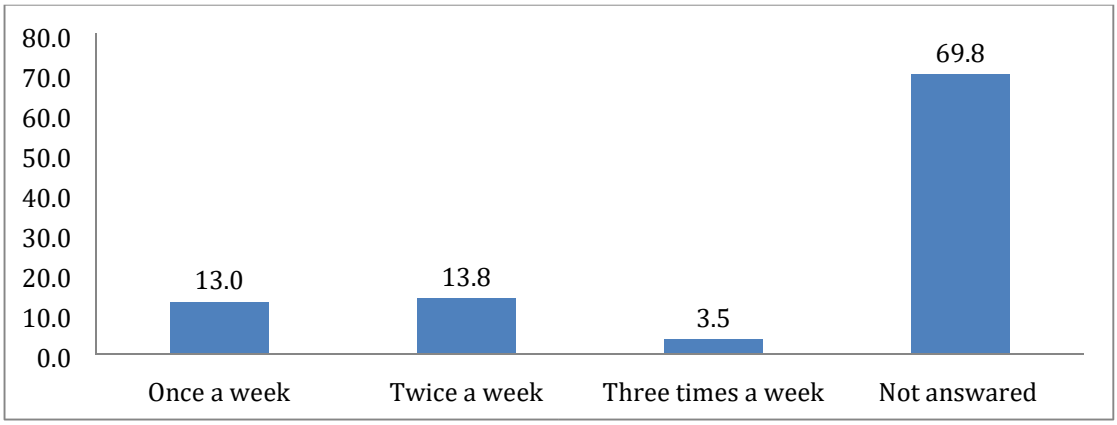

Figure 1. Answers of the study sample on how often they take probiotics supplements on weekly basis

17. Do you need prescription to take probiotics supplement?

The results showed variance in the answers of the study sample on the need for prescription to take probiotics supplements, their answers came as follows: strongly disagree (22.5%), disagree (21.3%), neutral (16.3%), agree (6.3%) and strongly agree (3.3%). The following figure shows these results.

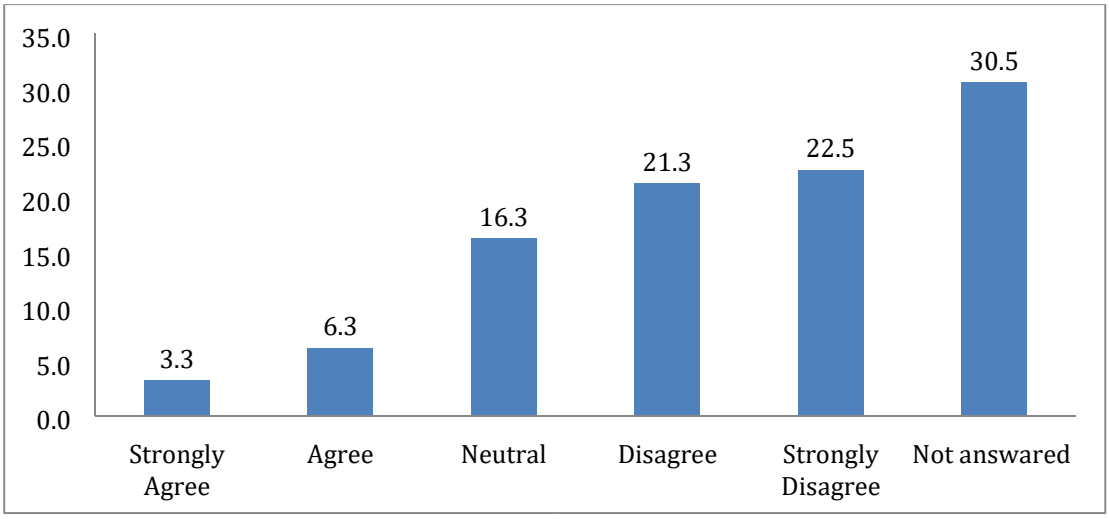

Figure 2. Answers of the study sample on the need for prescription to take probiotics supplements

18. Do you prefer taking probiotics through food or food supplements?

The results showed that (39.0%) of the study sample prefer taking probiotics through food, (14.0%)of the sample prefer taking probiotics through food supplements and (15.8%) of the

ISSN 2056-5798(Print), ISSN 2056-5801(online)

sample prefer taking probiotics through food and food supplements. The following figure shows these results.

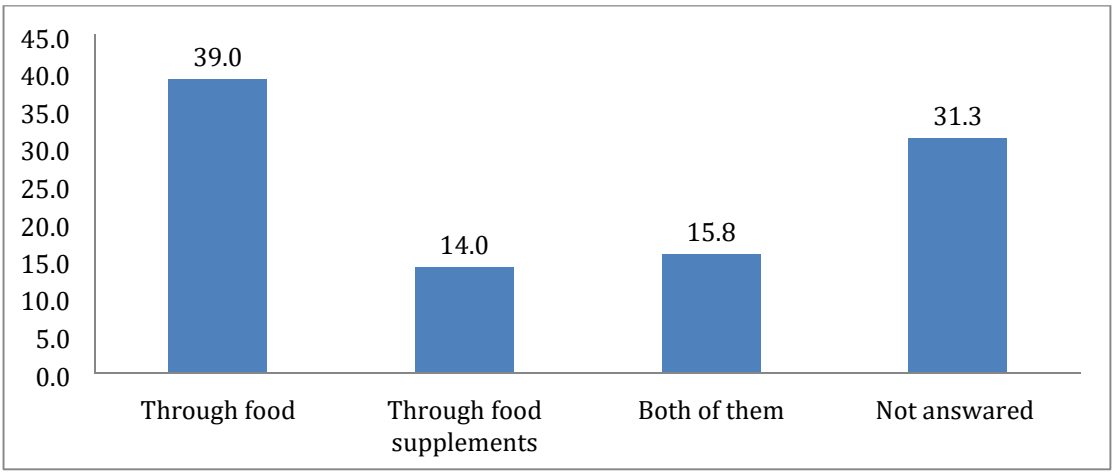

Figure 3. Answers of the study sample on the preference of taking probiotics through food or food supplements

19. What is your information source of Probiotics in general?

The results showed variance in the answers of the study sample on the source of information on probiotics, the main sources came as follows: internet (27.0%), doctor (19.0%) and nurse (10.3).The following table shows these results.

Table 17. Answers of the study sample on the source of information on probiotics

Answers		Frequency	Percent
Doctor	No	203	50.8
	Yes	76	19.0
	Not answered	121	30.3
phamacist	No	252	63.0
	Yes	27	6.8
	Not answered	121	30.3
nurse	No	238	59.5
	Yes	41	10.3
	Not answered	121	30.3
internet	No	171	42.8
	Yes	108	27.0
	Not answered	121	30.3

ISSN 2056-5798(Print), ISSN 2056-5801(online)

friends	No	248	62.0
	Yes	31	7.8
	Not answered	121	30.3

Results of the second question

What are the benefits of probiotics from the point of view of the study sample?

To identify the benefits of probiotics from the point of view of the study sample, the percentages, means and standard deviations of the sample answers were calculated as this question contains a number of sub-questions. The following table shows these results.

Table 18. Answers of the study sample on the benefits of probiotics from their own point of view

No	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std. Deviation
20	Does Probiotics improve digestion process:	1.3	.3	16.5	48.8	33.3	4.13	0.778
21	Does Probiotics preserve human health by helping it to get rid of toxic substances and prevent it from absorbing poisonous material:	1.5	3.0	26.0	48.8	20.8	3.84	0.836
22	Does Probiotics enhance the body's immune system and protect intestinal mucosa from some harmful substances and from inflammation:	2.5	3.0	29.3	45.3	20.0	3.77	0.888
23	Taking antibiotics would cause a dysfunction in the digestive system:	2.0	11.8	28.0	37.5	20.8	3.63	1.002
24	Probiotics would may cause one of these digestive disorders: diarrhea, irritable colon symptoms, vomiting....etc):	2.8	5.8	29.5	39.5	22.5	3.73	0.963
25	Probiotics may help replacing the natural body "good bacteria" that been missed because of using antibiotics:	1.3	4.8	27.5	45.0	21.5	3.81	0.870

ISSN 2056-5798(Print), ISSN 2056-5801(online)

26	Lactobacillus acidophilus is a strain of bacteria that can digest lactose, the sugar in milk and other dairy products:	2.0	10.3	41.8	31.5	14.5	3.46	0.930
27	Lactobacillus and Bifid bacterium are the most common probiotic bacteria:	2.5	4.5	44.5	33.0	15.5	3.55	0.894
28	Probiotics help with digestive enzymes that break down our food into digestible nutrients:	1.0	3.3	28.0	43.0	24.8	3.87	0.856
29	Probiotics are “good” gut bacteria that can improve digestive health and in absorbing minerals such as: Calcium, iron, magnesium:	1.3	8.5	30.0	39.5	20.8	3.70	0.934
30	Probiotics prevent the proliferation of harmful bacteria:	2.8	7.8	33.3	36.3	20.0	3.63	0.977
31	Probiotics correct digestive process:	2.8	6.8	27.0	43.3	20.3	3.72	0.954
32	Probiotics produce antimicrobial compounds inside the human body:	1.8	10.5	35.8	35.3	16.8	3.55	0.949
33	Some clinical studies have shown that probiotics may be effective in healing ulcerative colitis:	2.3	9.0	35.0	37.5	16.3	3.57	0.942
34	Would immune system be strengthened by probiotics?	2.5	6.5	28.8	39.5	22.8	3.74	0.965

The above table shows variance in the answers of the study sample on the benefits of probiotics from their own point of view. The most important benefits came in the following order:

1- Phrase No. (20): Probiotics improve digestion process, at (4.14) mean and (0.778) standard deviation.

2- Phrase No. (28): Probiotics help with digestive enzymes that break down our food into digestible nutrients, at (3.87) mean and (0.856)standard deviation.

3- Phrase No. (21): Probiotics preserve human health by helping it to get rid of toxic substances and prevent it from absorbing poisonous material, at (3.84) mean and (0.836)standard deviation.

ISSN 2056-5798(Print), ISSN 2056-5801(online)

4- Phrase No. (25): Probiotics help replacing the natural body "good bacteria" that been missed because of using antibiotics, at (3.81) mean and (0.870)standard deviation.

5- Phrase No. (22): Probiotics enhance the body's immune system and protect intestinal mucosa from some harmful substances and from inflammation, at (3.77) mean and (0.888) standard deviation.

6- Phrase No. (34): immune system would be strengthened by probiotics, at (3.74) mean and (0.965)standard deviation.

7- Phrase No. (24): Probiotics reduce digestive disorders, such as: diarrhea, irritable colon symptoms, vomiting and lactose intolerance, at (3.73) mean and (0.963)standard deviation.

The following figure shows the means of the answers of study sample on the benefits of probiotics from their own point of view

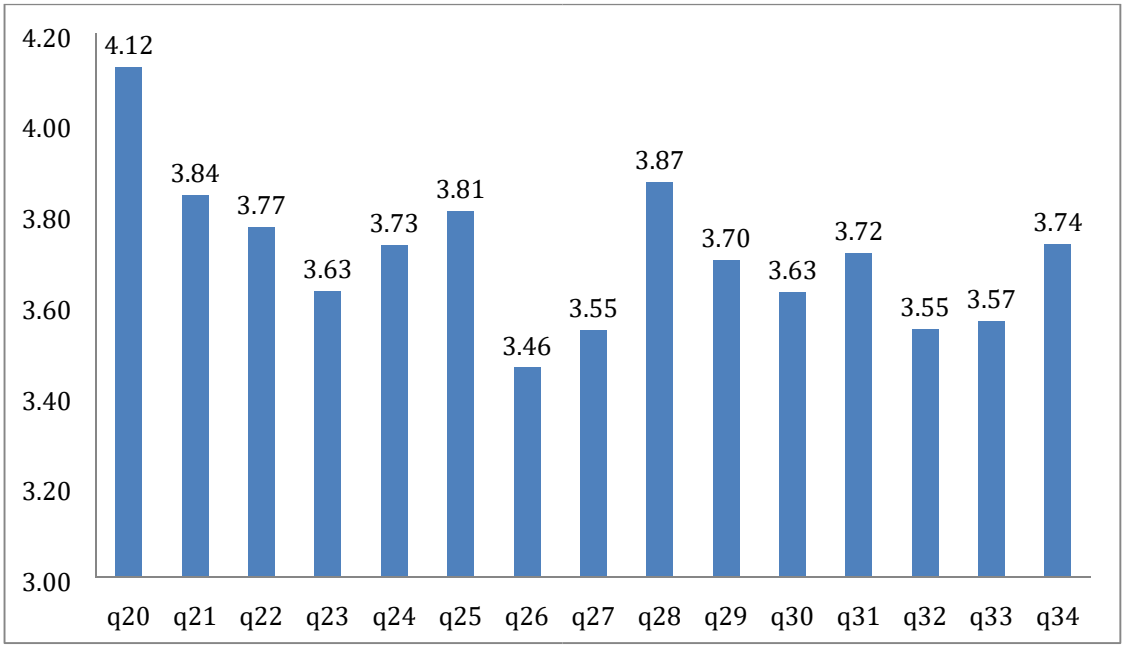

Figure 4.Means of the answers of study sample on the benefits of probiotics from their own point of view

To identify the statistical differences between the means of the sample members on the benefits of probiotics from their point of view according to the variables of gender, nationality, education level, work status and place of work, the t-test was used. Results are shown in the following tables:

ISSN 2056-5798(Print), ISSN 2056-5801(online)

Table 19.Results of t-test for the differences between the means of the sample members on the benefits of probiotics from their point of view according to the variables of gender, nationality, education level, work status and place of work.

Variables		N	Mean	Std. Deviation	t	df	Sig. (2tailed)
Gender	Male	141	3.74	0.529	0.747	398	0.46
	Female	259	3.70	0.583			
Nationality	Kuwaiti	324	3.74	0.554	1.783	398	0.08
	others	76	3.61	0.598			
Education Level	Diploma	393	3.71	0.567	-0.009	398	0.99
	University	7	3.71	0.392			
Work status	Work	33	3.79	0.589	0.824	398	0.41
	Don't work	367	3.71	0.562			
Place of work	Public sector	119	3.68	0.477	0.456	129	0.65
	Private sector	12	3.61	0.701			

The above table shows that there are no statistically significant differences at the level of (0.05) between the means of the sample members on the benefits of probiotics from their point of view according to the variables of gender, nationality, education level, work status and place of work, where the t-test values reached (0.747), (1.781), (-0.009), (0.824), (0.456), and the Statistical significance level reached (0.46), (0.08), (0.99), (0.41), (0.65), respectively.

To identify the statistical differences between the means of the sample members on the benefits of probiotics from their point of view according to the age variable, the One-Way Analysis of Variance (ANOVA) was used. Results are shown in the following tables:

Table 20.Analysis of results of the (ANOVA) for the differences between the means of the sample members on the benefits of probiotics from their point of view according to the age variable.

Age	N	Mean	Std. Deviation	Variance	Sum of Squares	df	Mean Square	F	Sig.
17 - 20 years	265	3.66	0.587	Between Groups	2.506	2	1.25	3.999	0.02
21 - 24 years	109	3.80	0.501	Within Groups	124.410	397	0.31		
25 - 29 years	26	3.88	0.499	Total	126.917	399			
Total	400	3.71	0.564						

ISSN 2056-5798(Print), ISSN 2056-5801(online)

The above table shows statistical differences between the means of the sample members on the benefits of probiotics from their point of view according to the age variable, where F value reached (3.999), and the Statistical significance level reached (0.02).

To identify the statistical differences, LSD test was used. Results are shown in the following tables:

Table 21.Results of the (LSD) test to identify the differences between the means of the sample on the benefits of probiotics from their point of view according to age variable.

I	J	Mean Difference (I-J)	Sig.
21 - 24 years	17 - 20 years	.14753*	0.02
25 - 29 years	17 - 20 years	.22726*	0.05

*The mean difference is significant at the 0.05 level.

The above table shows the following:

- There are statistically significant differences at the level of (0.05) between the age group (2124 years) and age group (17-20 years) on the benefits of probiotics from their point of view, the difference came in favor of age group (21-24 years).
- There are statistically significant differences at the level of (0.05) between the age group (2529 years) and age group (17-20 years) on the benefits of probiotics from their point of view, the difference came in favor of age group (25-29 years).

Discussion • with respect to the knowledge and use of probiotics for the study sample

The previous presentation of the results of the present research shows that (48%) of the study sample consume dairy products continuously, and that (42%) of the sample consume dairy products for some time. This may be referred to the awareness of the sample of the importance of dairy products as they provide the body with many important elements.

It was noted that (37.5%) of the study sample consume dairy products more than three times a week, and that (25%) of the sample consume dairy products once a week. These results confirm the importance of dairy products to human body.

It was noted that (55.3%) of the sample do not have a preferred time to consume dairy products, (35%)prefer to commune dairy products in the morning and (9.8%) prefer to consume dairy products in the evening. These results reflect the keenness of the sample to consume dairy products.

Also, the previous presentation shows the variance between the answers of the study sample on the favorite dairy products; it was found that (47.0%) of the study sample prefer condensed yogurt, (39.8%) prefer butter, (39.5%) prefer cream, (38.75%) prefer yogurt with fruit, (32.0%) prefer ice cream, (28.8%) prefer milk, (20.3%) prefer

ISSN 2056-5798(Print), ISSN 2056-5801(online)

cheeses, (19.8%) prefer flavored milk, and (15.0%) prefer yogurt. The previous results reflect how often the sample consume dairy products.

As for the favorite dairy companies for the study sample, the companies came in the following order: KDD, Activia, Nadec, Nativia, Almarai, Al-Safi, Kdcowand Nada. It was noted that (36.3%) of the sample evaluated their favorite dairy products as excellent and that (25.8%) of the sample evaluated their favorite dairy products as good. The previous results reflect the high quality of dairy products in the market.

Also, the previous presentation shows that (50.0%) of the study sample prefer probioticenriched dairy products, and that (19.8%) of the sample do not prefer probiotic-enriched dairy products. The most important companies that produce probiotic-enriched dairy products came in the following order from the point of view of the sample: Almarai (Vetal Yogurt), KDD (Provita Yogurt), Alsafi (Actimal Yogurt), Almarai (Vetal Milk)and Kdcow (Prolite Yogurt).

The previous results reflect the interest of the study sample in probiotic-enriched dairy products.

It was noted that (65.0%) of the study sample consider that probiotics are useful bacteria, and that (35.3%) of the sample see that probiotics are included in dairy products. the main foods that include probiotics from the point of view of the study sample came as follows: yogurt, milk and soft cheese. Also, (41.5%) of the study see that the probiotics are useful for the digestive system. The previous results show that the sample has some knowledge and information about probiotics.

It was noted that (24.8%) of the study sample see that probiotics are found as supplements, (24.5%) of the study sample take probiotics, (13.8%) of the sample take probiotics twice a week, and that they do not need prescription to take probiotics. The previous results reflect the keenness of the study sample to take probiotics though food and supplements.

It was noted that (39.0%) of the study sample prefer taking probiotics through food, and (15.8%) of the sample prefer taking probiotics through food and food supplements. Also, (27.0%) of the study sample obtained their knowledge and information about probiotics from the internet and (19.0%) of the sample obtained their knowledge and information about probiotics from doctor.

The previous presentation for the results of this study shows that the majority of the sample take dairy products and do not have favorite time for taking dairy products including; condensed yogurt, butter, cream, yogurt with fruit, ice cream, milk, cheeses, flavored milk and yogurt. The evaluation of dairy products was excellent, therefore, the sample prefer probioticenriched dairy products. It was noticed that the sample see probiotics as useful bacteria and that probiotics are included in dairy products, and probiotics are useful for the digestive system, and therefore they consume probiotics supplements.

- **As for the benefits of probiotics from the point of view of the study sample**

It is clear that the probiotics have many benefits; the main benefits were:

- Probiotics improve digestion process.

ISSN 2056-5798(Print), ISSN 2056-5801(online)

- Probiotics help with digestive enzymes that break down our food into digestible nutrients.
- Probiotics preserve human health by helping it to get rid of toxic substances and prevent it from absorbing poisonous material.
- Probiotics help replacing the natural body "good bacteria" that been missed because of using antibiotics.
- Probiotics enhance the body's immune system and protect intestinal mucosa from some harmful substances and from inflammation.
- Probiotics strengthen immune system.
- Probiotics reduce digestive disorders, such as: diarrhea, irritable colon symptoms and lactose intolerance.

The presentation for the research results shows that there are no statistically significant differences at the level of (0.05) between the means of the sample members on the benefits of probiotics from their point of view according to the variables of gender, nationality, education level, work status and place of work, while there are statistically significant differences at the level of (0.05) between the means of the sample members on the benefits of probiotics from their point of view according to the age variable; there are statistically significant differences between the age group (21-24 years) and age group (17-20 years) on the benefits of probiotics from their point of view, the difference came in favor of age group (21-24 years). Also, there are statistically significant differences between the age group (25-29 years) and age group (17-20 years) on the benefits of probiotics from their point of view, the difference came in favor of age group (25-29 years) because they have more access to internet compared to other age groups, which reflects positively on their knowledge and information about the benefits of probiotics.

Implication to Practice and Research

The retrieved data from the various points of view show that most of the students at the higher institutions of learning have an idea about the probiotics. Few people have the whole information about these bacteria and thus the reason why most of the participants were found to have been consuming much of these sources of probiotics but without the intentions of adding them into their bodies. This marked the success of the research in the explanation of the importance of the microorganisms to the human body despite the knowledge of it. It also shows the high percentage of the probiotics in the human body as a result of the variety of sources of the bacteria in food substances

SUMMARY AND CONCLUSION

Probiotics are beneficial bacteria that are necessary for the human body. Probiotics are available either as supplements or in fermented food sources, milk products being a major food source. Some food sources that are rich in probiotics include yogurt, kefir, miso soup, and soft cheeses, among others. Probiotics exist in two kinds of bacteria, which are Lactobacillus, and Bifid bacterium. In their beneficial role in the body, probiotics work by aiding in digestion and producing lactic acid. Their effect of producing lactic acid is beneficial because it provides an

ISSN 2056-5798(Print), ISSN 2056-5801(online)

acidic environment for the wall of the gut, preventing harmful microorganisms from proliferating. The probiotics, thus, enhance a balance of pathogenic and non-pathogenic microorganisms, preventing disease in the body of a human being. The probiotics also protect the body through other ways, such as producing cytokines, preventing pathogen binding, and inducing immunomodulatory mechanisms that enhance immunoprotection. A comparison of probiotic foods and supplements has revealed that the foods are a good source of probiotics than the supplements, mainly because the foods have a higher nutritional value, and that the foods come with additional benefits of fermentation.

Future research

Through the results achieved by the present study, the following studies and researches may be conducted:

- A future study on the importance of probiotics to human body, to be conducted on a different sample.
- A future study on how do dairy companies implement quality standards.
- A future study on how to improve probiotics in dairy products.

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