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MILK A HEAVENLY GIFT: HOW IT IS FORMED, ITS NUTRITIONAL AND HEALTH VALUEJamilah al-Hashemi^{1*}

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The study aims at showing how God, the Al-Mighty, endowed humanity with milk. This substance, although formed in the belly where blood and food are processed, is nutritious and void of any impurities. The research elaborates on the composition of milk and how it is formed. It also provides scientific evidence on the benefits of milk whether in terms of it being an essential element for nutrition or its medicinal properties that provide protection against disease. This proves the truthfulness and accuracy of the holy Quran's account with regards to milk. In addition to the nutritional value of milk, scientific research has proven its effectiveness in protection against disease, such as prevention of high blood pressure or decreasing the possibility of its occurrence. The study shows how dairy products intake is necessary for teeth and bone health and their maintenance. Its role in preventing certain cancers, especially breast cancer, is also demonstrated. The study refutes misconceptions that claim that milk causes certain diseases. The study concludes with scientific evidence the fact that milk is necessary for physical health as a result of its nutritional and medicinal values. The study recommends dairy product intake for health reasons. This was the heavenly plan when milk was created. The holy verses in the Quran that deal with milk are interpreted and explained in detail. Modern scientific research provides evidence of the authenticity of these Quranic verses. This shows the greatness of our holy Quran, which leads to our realization of the greatness of God, the Al-Mighty, and an appreciation of His blessings.

Keywords: Milk, Blood, Bone, Osteoporosis, Breast cancer, Blood pressure, Calcium, Vitamin D

INTRODUCTION

In the name of God, the most gracious, the most merciful, and peace be upon his Messenger. Milk is mentioned in God's book of wisdom and His miraculous verses. People become curious when they read God's words, "And indeed, for you in grazing livestock is a lesson. We give you drink from what is in their bellies - between excretion and blood - pure milk, palatable to drinkers." Surah an-Nahl (66), (Sahih International).

Glory be to God, the Al-Mighty, and blessed are his creations: how could palatable milk free of impurities be produced without getting mixed with excretion and blood?

Milk is also mentioned in another Surah, "...which the righteous are promised, wherein are rivers of water unaltered, rivers of milk the taste of which never changes, rivers of wine delicious to those who drink, and rivers of purified honey, in which they will have from all [kinds of] fruits and forgiveness from their Lord," Surah Mohammad (15). Hence, the study aims at finding out the benefits humans obtain from milk since it is a heavenly miracle created as a reward for the believers. As narrated by Abu Dawood and others, Ibn Abbas said that milk was brought to our gracious Messenger, Mohammad (pbuh), so he drank it and said, "If someone eats certain food, he should say, God bless this food and grant us better food. If he is given milk,

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he should say, God bless this food and multiply it for nothing can substitute (all other kinds of) food and drink except milk.” (Hanbal, 2001).

Milk is the liquid that comes out of mammals’ teats which fulfills the infant’s nutritional needs at the first stages of its life since milk is rich with casein, protein which is necessary for body building, basic sugars and proper amount of easily digested fats. Moreover, milk can be processed to produce many products, such as cheese, yoghurt, cream, butter and other products.

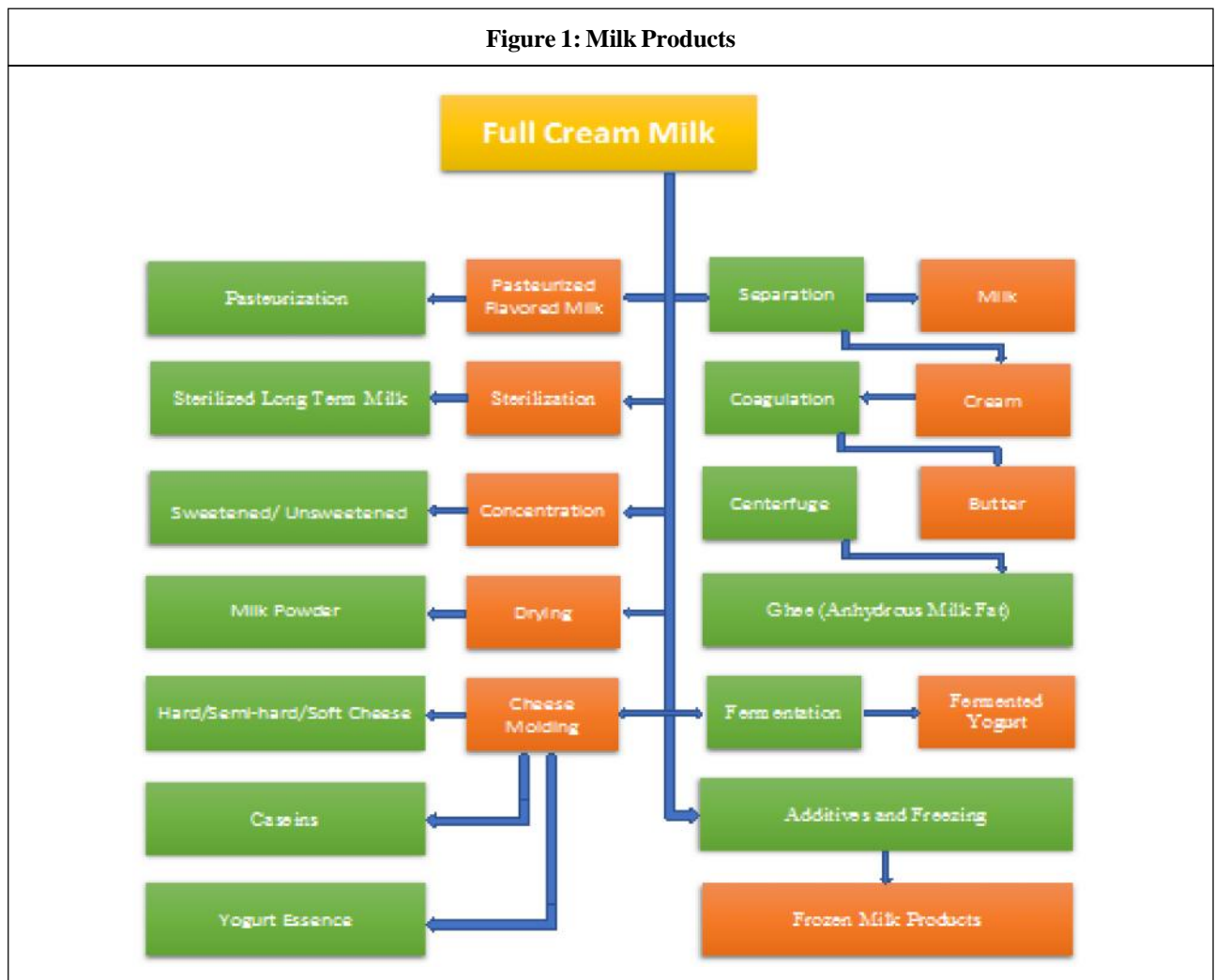
Various Interpretations of the Holy verse Regarding Milk

“And indeed, for you in grazing livestock is a lesson. We give you drink from what is in their bellies - between excretion and blood - pure milk, palatable to drinkers.” Surah an-Nahl (66), (Sahih International).

The holy verse puts forward the following propositions:

One: When God says, “And indeed, for you in grazing livestock is a lesson,” livestock here includes the higher mammal types, such as camels, cows, sheep and goats. A lesson originally means explication of something by introducing its like to explain its nature. Abu Baker al-Warraq said, “This indicates that these mammals are created to obey their owners and are utilized for human benefit.” The lesson learned signifies the greatness, oneness and absolute ability of God.

Two: The Al-Mighty God showed his ability of separating pure milk from blood and excretion in the bodies of these mammals when He says, “We give you drink from what is in their bellies - between excretion and blood - pure milk.” Excretion here is what remains in the digestive system to be disposed of later. Food in the body is transformed into blood,



milk, and excretion, which are separated. Ibn Abbas said that the animal takes food in to be digested. At the bottom part excretion remains, above it in the middle milk is formed and blood stays at the top. The liver separates and processes blood then sends it into veins, sends milk to the udder while the excretion remains at the bottom of the stomach. This delicate process is evidence of the great heavenly wisdom. Pure here refers to the white color of milk, which is free of impurities and retains its white color although it was mixed with blood and excretion in one container. Ibn Bahar interprets “pure” as pure white referring to the color of milk.

Three: The holy verse confirms that people can consume milk and its products. However, milk of the dead cannot be consumed since it comes from an impure specimen, as the products of a corpse are not pure. So, milk, which is pure, is taken from a specimen that is not pure, hence rendering it impure. Scholars differed though with regards to the dead woman’s milk. Some said the human body is free from taint whether dead or alive; while others said that it becomes impure as a result of death for death causes impurity. But both confirm its impurity. The Messenger (pbuh) said, “Breast feeding builds flesh and bones,” but he did not specify whether this breast feeding referred to both a living or deceased woman.

Four: The Al-Mighty words, “palatable to drinkers” means pleasant and easy to consume, so that whoever drinks it will not choke. It was said that no one ever choked from milk., this was also said by Prophet Mohammad (pbuh).

Five: The holy verse provides us with evidence that consumption of delicious food is acceptable. It does not negate pleasure-seeking or calls for deserting it, but approves it if done in moderation and not in excess. Such opinion is expressed in Surat Al-Ma’idah and in other Surahs as well. Ibn Anas said in his Sahih, “I gave God’s Messenger in this cup of mine all kinds of tasty food and drinks: honey, milk, and water.” Some scholars did not approve of eating desserts and delicacies like Falouthaj (an Arabic dessert) or milk, but the majority did. It was narrated that al-Hassan was at a dinner table with Malik Bin Dinar and dessert was brought so Malik refused to eat it. Al-Hassan told him to eat the dessert since cool water could have a more enticing taste than the dessert.

Six: Abu Dawood and others narrated that Ibn Abbas said that the Messenger of God (pbuh) was brought milk so he drank it and said: “If someone is done eating, he should say

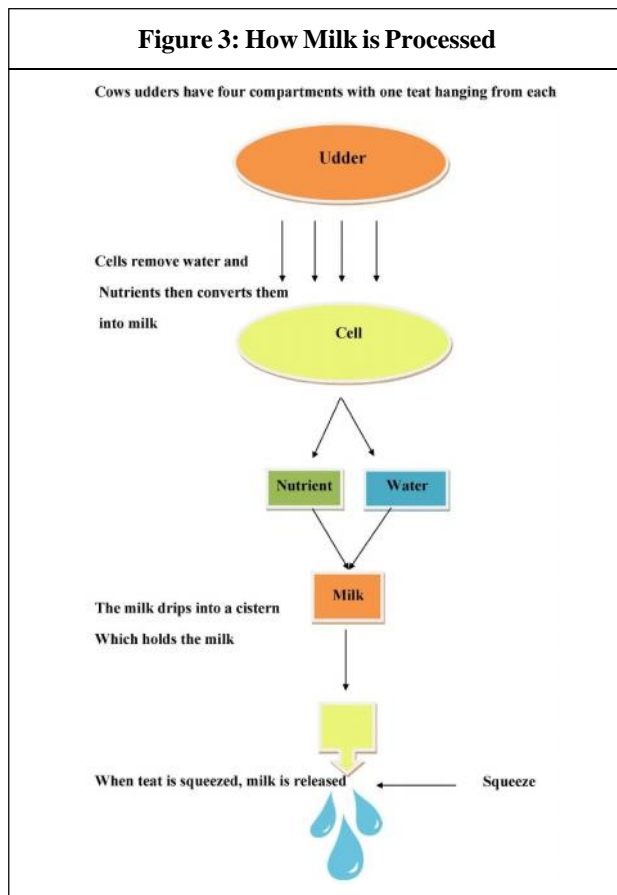
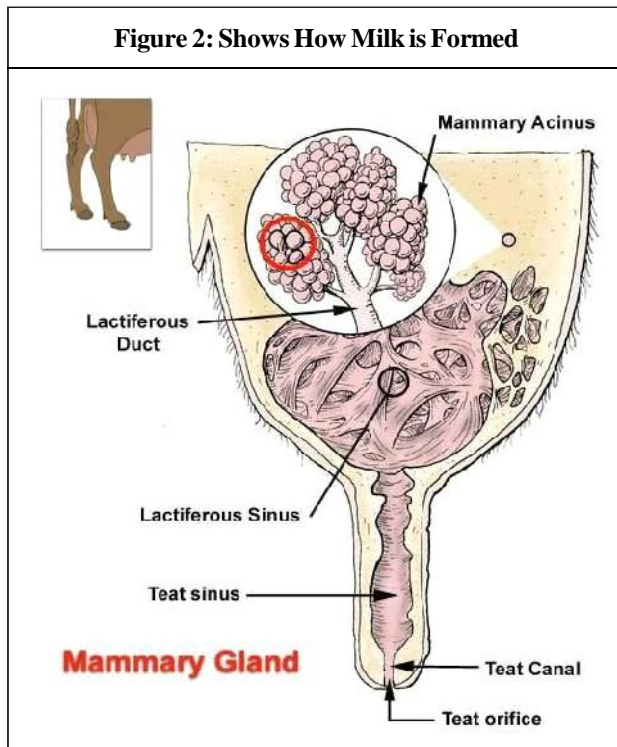
may God bless this food and grant us with better food. If he is given milk, he should say may God bless this food and multiply it for no food can substitute all other foods and drinks except milk.” Muslim scientists confirm the fact by saying that milk is the first food humans consume to provide them with full nourishment. Milk is food that builds our bodies and is free of harmful components. God the Al-Mighty made of milk a symbol of choosing the right path. Our Messenger (pbuh) says in Al-Sahih, “Gabriel brought me two containers: one that has wine and another that has milk. I chose milk. Gabriel said you chose instinct. If you had chosen wine, your followers would have gone astray.” In addition, asking for its multiplication is a sign of nourishment, fertility and blessedness (Al-Qurtubi, 2007).

It is said that no one has ever choked while drinking milk. Ibn Abbas said, “When livestock eat and the food settles in the stomach to be digested, the excretion stays at the bottom, milk in the middle and blood at the top. The liver acts in a manner that separates these components so blood flows into the veins, milk into the udder and waste remains there” (Al-Baghawi, 1989).

God’s words, “... between excretion and blood, pure milk,” mean that the color of milk, its taste and sweetness are not affected by the blood and excretion inside the animal’s belly. When food is digested, each element is directed to where it is destined. The blood goes to the veins, the milk to the udder, the urine to the bladder and the remaining waste to the rectum. None of these elements affects or is affected by the others after they are separated (Ibn Kathir, 2000).

According to Ibn al-Sa’adi, “And indeed, for you in grazing livestock is a lesson,” means an evidence that shows God’s absolute ability and His vast generosity for He gave us pure milk free from any harmful impurities from those animals’ bellies that contain blood and excretion. Pure milk that is pleasant and tasty to quench our thirst and provide us with nourishment. Isn’t this a Godly will and ability that is supernatural? What in nature can transform the food an animal eats and the salty or fresh water it drinks into pure palatable milk? (Al-Saadi, 2000).

Modern science provides evidence of the authenticity of the above interpretations of the Ayah. Various research has been conducted with regards to how milk is formed and processed, its nutritional properties and its health and medicinal value. Figure 2 below shows how milk is formed.



Nutritional Value of Milk

Milk is considered one of the high nutritional foods since it naturally provides people with more than ten nutritional elements, such as potassium, vitamin A, vitamin B, riboflavin and vitamin B12. Five of these are basic nutrients necessary for bone building and maintenance. These are calcium, phosphorus, magnesium, fluoride and vitamin D found in full cream products (<http://www.milka.org.il>).

Milk has a distinct protein composition, which has a high biological value. The main protein in cow milk is casein which makes up 80% of the total while other protein types make up the remaining 20%. Fats in milk products contain 62% of saturated fats, 30% monounsaturated fat and 4% of unsaturated fats. Numerous research proved that fat components serve unique biological functions which are essential for health. The main source of carbohydrates in milk is lactose. Cow milk contains 4.5% of lactose compared to mother's milk, which contains 7%.

All findings presented in tabular or graphical form shall be described in this section. The data should be statistically analyzed and the level of significance stated. Data that is not statistically significant need only to be mentioned in the text – no illustration is necessary.

The table below shows the daily needs of calcium and vitamin D for various age groups.

Health Benefits of Milk

The most important health benefits of milk are building and maintenance of bones and teeth, prevention of cardiac diseases, and keeping blood pressure at a normal rate. It also protects against some kinds of cancer, such as colon

Table 1: Nutritional Elements in a Cup of Milk

Nutrients	Low-Fat Milk	Fat-Free Milk	Full-Fat Milk
Calories	102	86	146
Fats	2 mg	0 mg	8 mg
Cholesterol	12 mg	5 mg	24 mg
Sodium	107 mg	128 mg	98 mg
Carbohydrates	13 mg	12 mg	13 mg
Sugar	13 mg	12 mg	13 mg
Proteins	8 mg	8 mg	8 mg

Table 2: Daily Needs of Calcium and Vitamin D for Various Age Groups

Age Group	Calcium Need Milligram /Day	Vitamin "D" Need Microgram /Day	Daily Milk Amount
Birth-Six months	200	10	800-1200 mil/Daily
Six Months-year	260	10	800-1200 mil/Daily
1-3 years	700	15	Two v
4-8 years	1000	15	Three Cups
9-18 years	1300	15	Three Cups
19-50 years	1000	15	Two Cups
51-70- years (Women)	1200	15	Three Cups

Table 3: Comparison Between Human, Goat and Cow Milk

Vitamins mg/liter	Human	Goats	Cows
Vitamin A (per liter)	1898.0 (2410)	2074.0 (1850)	1560.0 (1380)
Vitamin D	22	23.7	33
Thiamin	0.16 (0.14)	0.40 (.48)	0.44 (.38)
Riboflavin	0.36 (.36)	1.84 (1.38)	1.75 (1.61)
Nicotinic acid	1.47 (1.77)	1.87 (2.7)	0.94 (.84)
Vitamin B6	0.10 (.11)	0.07 (.46)	0.64 (.42)
Pantothenic	1.84 (2.23)	3.44 (3.1)	3.46 (3.13)
Biotin	0.008	0.039	0.031
Folic Acid	0.002	0.0024	0.0028
Vitamin B12	0.0003 (.00045)	0.0006 (.00065)	0.0043 (.0036)
Ascorbic acid	43.0 (50)	15.0 (13.0)	21.1 (14.7)
Colin	90	150	121
Inositol	330	210	110

cancer. It decreases the possibility of developing diabetes; improves the performance of the nervous system; improves the digestion process and helps in growth. Moreover, milk provides the body with energy, boosts immunity, treats dehydration, protects eyesight and maintains membranes, skin, and hair.

Common products derived from milk are fresh milk, long-term milk, dried milk, condensed milk, white cheese, hard and soft cheese, cream, yogurt, butter, labneh and ice-cream (The Nutritional Value of Milk, 2018).

The Effect of Dairy Product Intake on the Development of Hypertension

A Dutch study published in April 2009 in The American Journal of Clinical Nutrition aimed to find out the relation between hypertension and the intake of dairy products. The relation between dairy intake and incident hypertension in 2245 participants, who were free of hypertension at baseline, was examined. Reexamination of blood pressure and follow-up for two years showed that risk of hypertension was inversely associated with dairy product intake. Analysis showed that the risk of hypertension was reduced to 30% for those who had more dairy products intake. The study concluded that the intake of dairy products contributes to the prevention of hypertension at an older age.

Another research, which included 12 researches dealing with hypertension, and a population of 623 participants who suffer hypertension, was published in the scientific magazine Nutrition in 2008. Results showed that casein peptide chains in milk caused noticeable decrease in both systolic and diastolic blood pressure. This research supports other previous research in concluding that milk products are more beneficial than calcium supplements in lowering blood pressure. This comes as a result of the fact that milk has constituents such as peptides, potassium, and magnesium, which associate with calcium to lower blood pressure (Wang *et al.*, 2008).

A third study, which was published in the scientific journal Hypertension in April 2008, found that the intake of dairy products was inversely associated with the risk of hypertension. The population of the study was 28866 middle-aged women (45 years old and above) from the US and the study lasted for 10 years. The study concluded that hypertension incidents for those who had three daily servings of dairy products were 11% less than for those who did not have any. The study also found that intakes of low-fat dairy products had a potential role in the primary

prevention of hypertension. The study recommended the intake of 3 daily servings of dairy products.

A research conducted in Spain in 2008 and published in the British Journal of Nutrition and found, after a year of follow-up, that intake of low-fat dairy products, such as milk, yogurt and cottage cheese, was inversely associated with high blood pressure. The participants were 2000 men aged 55-80 and women aged 60-80. It was observed that the decrease in blood pressure level was constant. Intake of low-fat dairy products was recommended for older population suggesting a possible protective effect against hypertension.

Another study published in The Journal of Pediatrics in 2008 concluded that a diet high in vegetables, fruits, and low-fat dairy products, DASH intervention, had a greater decrease in blood pressure. Participants were fifty-seven adolescents from the United States who had a clinical diagnosis of prehypertension or hypertension (Ying *et al.*, 2008).

Dairy Products and Bone Integrity

A recent study indicated that intake of vitamin D along with certain types of dairy products may prevent lack of bone density for older people. Researchers observed that intake of milk, yogurt and cheese is associated with an increase of bone mineral density in the backbone, with a decrease in lack of bone density of the hip for older people, on the condition that vitamin D supplements are added. Researchers noted that vitamin D stimulates absorption of calcium which contributes to bone building and maintenance and prevents lack of bone density (Medicalxpress, 2018).

In another study carried out by researchers from Harvard Medical School in the US, the researchers used 2148 participants (and tested 3064 knees) diagnosed with knee osteoarthritis. They were also diagnosed radiographically and each had dietary information gathered at baseline and were followed up for four years to evaluate knee osteoarthritis progression. A questionnaire was used to assess milk consumption. Participants were asked how often they had any kind of milk in the past 50 months. Knee osteoarthritis progression was measured by using quantitative Joint Space Width (JSW) between the medial femur and the knee tibia based on radiographs, which is a standard clinical measure. The research results showed that women who regularly drank milk had slower knee osteoarthritis disease progression when compared with the ones drinking less milk over a four-year period. The above result was found in the case of women, but not in men (NHS Choices, 2014).

A recent study in Japan examined the relationship between the consumption of dairy products and bone health. The participants were 38719 high school students (14996 boys, 23723 girls) from all over Japan. They filled questionnaires, which included questions on age, weight, height, physical activity and consumption of dairy products. Milk consumption was categorized within groups: never, and more than 400 ml per day. Data showed that 21% of the boys and 7.3% of the girls consumed more than 400 ml of milk per day, while 24% of the boys and 41% of the girls did not consume milk at all. When comparing the consumption of milk and yogurt among adolescents (male and female), it was found out that the more the consumption the stronger the bones were. The study also found a relationship between exercise and bone strength (Uenishi and Nakamura, 2010).

Inverse Relationship Between Milk Intake and Breast Cancer Risk

A research entitled Cohort Cancer and Diet Malmö was conducted in Sweden and included 1700 women participants aged 45-73. The research examined the relation between food consumption and breast cancer incidents within 10 years. The study found an association between yoghurt and milk intake (3% fat) and decrease in breast cancer risk. However, the study found that consumption of margarine and dried soups are related to an increase in breast cancer risk (Sonestedt *et al.*, 2011).

Various studies examined the relation between cancer and nutrients found in milk products such as vitamin D and calcium. Data from 36 studies conducted in China were included in a meta-analysis. This meta-analysis examined the overall effects of vitamin D and calcium intake on breast cancer risk. From the meta-analysis, findings were that there was a significant inverse relationship between vitamin D intake and breast cancer risk, with an overall relative risk of high versus low vitamin D intake for breast cancer. The highest quantile was found to be associated with a 45% decrease in breast cancer when compared with the lowest quantile. For calcium, a 19% decrease in breast cancer risk was found for those with highest quantile of calcium intake compared to the lowest quantile. The highest quantile of vitamin D consumption compared to the lowest quantile showed a 9% decrease in breast cancer risk. These results provide strong evidence that vitamin D and calcium have a preventive effect against breast cancer. However, these doses were relatively low, so additional studies are needed to confirm the relationship between vitamin D and calcium intake and breast density.

In conclusion, the overall results suggest that high vitamin D and calcium intake are associated with a decreased risk of breast cancer. In addition, building bones of the young and prevention of osteoporosis in the old are two main functions of calcium and vitamin D (Chen *et al.*, 2010).

Refutation of the Misconceptions

Various publications wrongly claim that milk consumption causes unhealthy and harmful effects and results in an inverse effect on bone integrity in addition to other unfounded allegations. This enraged Dr. Moza Bin Mohammad al-Rubban who responded to these claims by pointing out that results of these studies were certainly inaccurate. She stated that most probably some cows have been exposed to pollutants which resulted in polluting the milk they produced. She confirmed that this happened as a direct result of absence of morality in science and economy. The problem is caused by lack of morality and human values in modern civilization; not because of milk. Corruption and contamination are caused by human practices and evident all over the world: in air, land and sea. We are in dire need to utilize science as a means to achieve our human mission, which is to build our planet not to destroy it and disseminate corruption in all facets of life. Building our earth and living a prosperous human civilization is worship since this constitutes worship and submission to God's will. Dr. Rubban ends with emphasizing that this is how science must be used, the manner our great Islam intended it to be.

By creating milk, the Al-Mighty God has given us an example of His ability and a reward He endowed us with. In the holy Quran, God the Al-Mighty says, "And indeed, for you in grazing livestock is a lesson. We give you drink from what is in their bellies - between excretion and blood - pure milk, palatable to drinkers." Surah an-Nahl (66). Milk is palatable for humans and animals too. Humans have known milk, consumed it as a main diet and as a result survived for thousands of years without being infected with disease. Only when humans went astray, stopped believing in God, values and morality that corruption spread all over facets of life. They even used science as a tool to spread and disseminate corruption and vice. Then they started complaining and whining about the corruption they have caused; lethal corruption that overwhelmed nature and the environment in all forms. Our Messenger (pbuh) said, "If someone eats certain food, he should say God bless this food and grant us better food. If he is given milk, he should say God bless this food and multiply it for nothing can substitute all food and drink as milk does."

Thank God the Al-Mighty and His truthful Messenger (Al-Albani, 1996).

CONCLUSION

The research elaborated on the holy Quranic verse that scientifically explained milk composition and the miraculous process it goes through in the body. It also proves the truthfulness of the holy Quranic verse by providing modern scientific evidence of milk's benefits. These benefits which include building our bodies and protecting us against disease. It has been scientifically proven that milk protects against blood pressure, osteoporosis and breast cancer. Milk contains numerous beneficial nutrients necessary for humans of all age groups. It is the comprehensive nutritional diet that a baby depends on at the early stages of life. Milk wouldn't have been mentioned in the holy Quran if it hadn't been so beneficial.

Based on the above, everyone is advised to ensure consuming the proper quantities of their daily needs of milk. It is the duty of the Muslim who believes in God's holy verses to think of these verses and comprehend the message since that any blessing bestowed by God the Al-Mighty wouldn't have been mentioned in the holy Quran if it hadn't been so beneficial. What modern science has discovered of milk's benefits is just a drop of water in an ocean. The future will show more of milk's benefits, and the more benefits are discovered, the more evidence we have of the miraculous truthfulness of our holy Quran and our righteous Islamic religion. Thus, we must thank God so much for His infinite blessings. Thank you, God now and always.

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