

Working Paper No (56)

Horizons of Functional Food Production in Syria and its Exportation to International Markets: Russia as an Example

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Damascus, July 2013

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Preface

Functional food (F.F) can be an opportunity for economic growth for many developing countries, particularly those enjoying biodiversity and cumulative traditional knowledge about health effects of domestic plant species. Furthermore, many developing countries can compete in F.F production, considering the low cost of labor, if compared to developed countries. Moreover, besides the economic opportunities emerging from producing diversified and high-value F.F, farming activities related to F.F processing can boost agricultural development in rural communities through offering opportunities for the agricultural and agro-food jobs linked with investments (whether private or public investments) focused on F.F production and manufacturing, particularly if new wild species are domesticated and utilized in this regard.

This working paper aims at reviewing the scope of F.F production in Syria for the purpose of exporting it to foreign markets, in which the demand on F.F is increasing rapidly, focusing particularly on the Russian market as a case study. This choice is in harmony with the general direction of Syria's government (i.e. stepping easterly) on the one hand, and it is because the Russian market is a demanding market for F.F in light of the relatively huge Russian consumers' awareness of health benefits that can be ripped from F.F on the other hand.

The paper opens wide the door for each of Syrian agricultural exportation and Syrian food industry at the same time. It simultaneously addresses the huge number of functional advantages that our national agricultural products may hold, and offers critical suggestions for marketing these products in the Russian (and others) markets. This would pave the way for earning huge financial returns in hard currency, which can help the country to increase its ability to economically face the current crisis, in which Syria is passing through.

Acknowledgement

I would like to express my deep thanks to Prof. Dr. Boris A. Shenderov, head of research group “Probiotic and Functional Food” at the Moscow Research Institute of Epidemiology and Microbiology, project director of programme “Health through Nutrition” in Russian Federation, and the deputy head of the editorial committee of journal “Clinical Nutrition” (St. Petersburg) for his valuable contribution being utilized in “Russian regulations on F.F” and “Analyzing the demand of Russian market on F.F” articles, wishing him more success.

Picture 1: Some foods deserve to be preserved in the home-pharmacy, considering its medical and health benefits¹.



¹ Source of the picture: Williams et al, 2006.

1. Introduction

F.F is defined as “foods that may provide health benefits beyond basic nutrition” (Duncan, 2012), or in other words, it is the food consumed as a part of a normal dietary system, yet it holds special functional advantages (related to body’s organs) or biological characteristics that allow it to reduce the risk of different diseases.

Notably, consumers’ interest in increasing their knowledge about the link between F.F and wellness has been growing in recent decades, which can be demonstrated through the increasing demand on F.F-related information. The link between the food and its functional components has been crystallizing historically. In this respect, it was to hinder deficiency diseases in past centuries (like consuming fruits to avoid scurvy), and then it turned to include hindering chronic diseases now (such as cancers and others). Correspondingly, the F.F ended as foods that contain special components that are biologically active and can enhance food content, and provide it with health benefits at the same time. F.F has multiple implications in several health fields, covering all ages for males and females, particularly children and older adults. Specifically, F.F is perceived as a good strategy to increase children’s immunity and improve older adults’ health conditions. F.F consumption has an extra advantage, where it indirectly stimulates people to take into consideration different health risks, thus raising the level of health awareness in the community – a progressive relationship between consumption and awareness.

Picture 1: F.F processed products, including eggs treated with unsaturated fats, dairy products with phytosterols, and plant sprouts².



1.1 Types of F.F

The F.Fs can have many types. F.F could be a traditional food that contains biologically active components, which their consumption leads to positive health effects. It could be also a

² Source: Duncan, 2012

fortified or improved food, developed specifically for the purpose of reducing the risk of a given disease on special group of people. In general, consumers can choose their F.F from a wide range of food products. On the other hand, F.Fs can be categorized by more than one way. For example, F.Fs can be categorized on the basis of how the consumer was informed about its benefits; demand on F.Fs can emerge either due to orally-inherited information (like the inherited stories about cranberry's benefits), or due to advertisement telling about the fortification of some foods (like folic acid fortified cereals). Identically, consumer could be aware of the benefits of a given F.F, so he/she decides to increase his/her intake of this F.F, or he/she may become aware of the benefits of a given F.F, so he/she decides to start consuming it.

Furthermore, F.F can be categorized according to its food source, functionality, chemical structure, or its functional impact on the human body³.

1.2 Examples of F.Fs

The most prominent examples of F.F products encompass some kinds of fruits and vegetables, besides fortified foods and beverages. The following table contains examples of some types of F.Fs⁴ that are producible in Syria, and introduces suggested styles for their market forms and how to advertise them as well.

³ Researcher Khalid Al Madani, <http://www.aawsat.com/details.asp?issueno=11700&article=586128>

⁴ Utilizing www.foodinsight.org/foodsforhealth.aspx

Table 1: Examples of some producible F.Fs in Syria, and suggested styles for their market forms and how to advertise them.

Syrian agricultural products	Functional component	Functionality	Suggestions on how to use	Proposed market form
Carrot, pumpkin, sweet potato, melon, spinach, tomato	Beta carotene	Neutralizing free harmful radicals, hindering oxidants, stimulating the body to produce vitamin A	Carotene is a shield against cancer: to get a rich-with-carotene food, buy the Syrian frozen sweet potato, slice it, spice it, and roast it!	Sweet potato slices, frozen and packed in healthy bags
Wheat bran, fruit skins	Insoluble fibers	Maintaining digestive system, reducing some cancers' risks	To maintain a healthy digestive system, add brans of Syrian durum wheat when preparing cocktail or cake!	Small refills of wheat bran
Kiwi, citrus, strawberry, fortified food and beverages	Vitamin C	Neutralizing free harmful radicals, maintaining bones, maintaining the immune system	Double your consumption of vitamin C to avoid osteoporosis	Refills of mixed natural fruit juices
Fortified dairy	Free sterols	Protect from Coronary heart disease (CHD)	To avoid heart diseases, add the low-fatted & sterols-fortified Syrian yogurt to your diet	Refills of processed yogurt
Broccoli and cabbage	Sulforaphane (an organic sulfur compound)	Contribute in disassembling poisons in the food and discourage oxidization	Keep Syrian frozen cabbage in your freezer to get rid of food's poisons; to consume: heat and eat with snacks	Cut and frozen cabbage
Plantago brans (a plant that grows in Syrian Badia)	Soluble fibers	Useful for weight loss, reducer of heart diseases' risks	To avoid colon pain, add the product of plantago brans when preparing cocktail	Small refills of plantago brans
Tomato and tomato paste, watermelon, grapefruit	Lycopene	Maintaining prostate health	To maintain prostate health, add tomato juice to your vodka! ⁵	Refills of tomato juice

It should be noted that when Syrian agricultural products are mentioned, well-known, distinguished and good-reputation products come to minds. Accordingly, this good reputation

⁵ This is for communities that are vodka consumers, such as Russians for example.

should be utilized, strengthened, and promoted through building upon it in favor of creating or increasing destination markets for Syria's F.F exported products.

2. The economic importance of F.F

F.F products represent an opportunity for additional growth in terms of local agro-food industries. Furthermore, as mentioned previously, an increasing number of consumers worldwide understand the ability to control their permanent wellness through improving their current health, and combating age old diseases and future diseases, thus creating demand on food products that have advanced characteristics connected with health benefits. In this sense, one American study⁶ found that 93% of consumers believe that specific foods have health benefits that can reduce the risk of a given disease or other health concerns, while 85% of them state that they want to know more about the benefits which can be obtained from F.F. In this respect, some regions and countries are perceived as huge potential markets for F.F and natural health products (NHPs)⁷. These countries and regions are as follows: China, India, Brazil, Mexico, Eastern Europe and Russia. The expectations about these markets spring from the fact that the currently increasing GDPs in the giant emerging developing economies (particularly China, Russia and Brazil) are stimulating a growing market demand on F.F.

Experts think that the world market for F.F is large, and estimate it is growing with about US\$ 50 billion annually⁸, which underlines the huge potential market for Syrian F.F products, where these products may take advantage of this giant and extending market, particularly the markets of "emerging economies".

Nevertheless, considering that agro-food sector is one of the most protected sectors within the global economy, and various trade barriers are common in it, F.F products are repeatedly facing barriers that either act as import ban or increase import costs, which sustains imports at minimum levels.

In the framework of F.F literature, Zhang and Kerr⁹ indicate that trade barriers in F.F sector are likely in place before developing and producing the foods with health benefits; therefore, trade policymakers could be wishing to re-visit their decisions in light of an adequate information about F.F. Accordingly, it would be useful to develop a theoretical framework to

⁶ MacAulay et al, 2006, based on International Food Information Council, 2002.

⁷ http://www.agriculture.gov.sk.ca/natural_health_products

⁸ Zhang and Kerr, 2008.

⁹ Zhang and Kerr, 2008.

clarify the benefits that may be gained from eliminating or reducing existing trade barriers, assuming that an F.F is developed or a conventional food is no more but an F.F.

Box 1: a model for trade partial equilibrium, suggested by Zhang and Kerr.

Zhang and Kerr model illustrates the impact of affording F.F to consumers, which provides them with health benefits, in light of pre-existence of various trade barriers, and thus a resulted change in utility. In the final analysis, four different cases appear when trade barriers and affordability of F.F are crossed.

Trade policy \ Affordability of F.F	Trade	Cost increasing regulations	Import prohibiting regulations
F.F products can be supplied by domestic producers and obtained from the international market		Case 1	Case 2
F.F products can be obtained only from the international market		Case 3	Case 4

Assuming that η is the ratio between the change in favor of consumer and the change in favor of producer, we can write the following:

Before F.F is available in the market: $\eta = \frac{\Delta \text{ consumer surplus}}{\Delta \text{ producer surplus}}$

After F.F is available in the market: $\eta = \frac{\Delta \text{ consumer surplus} + \text{HCS}}{\Delta \text{ producer surplus}}$

Where: HCS represents the savings in health care costs for the government as a result of the consumption of the F.F.

In light of the outcome resulted from applying this indicator, trade decision maker can revisit his/her decision on imposing trade barriers on F.Fs, where a new decision may be selective and accurate in a way that take into consideration the benefits that F.F can afford.

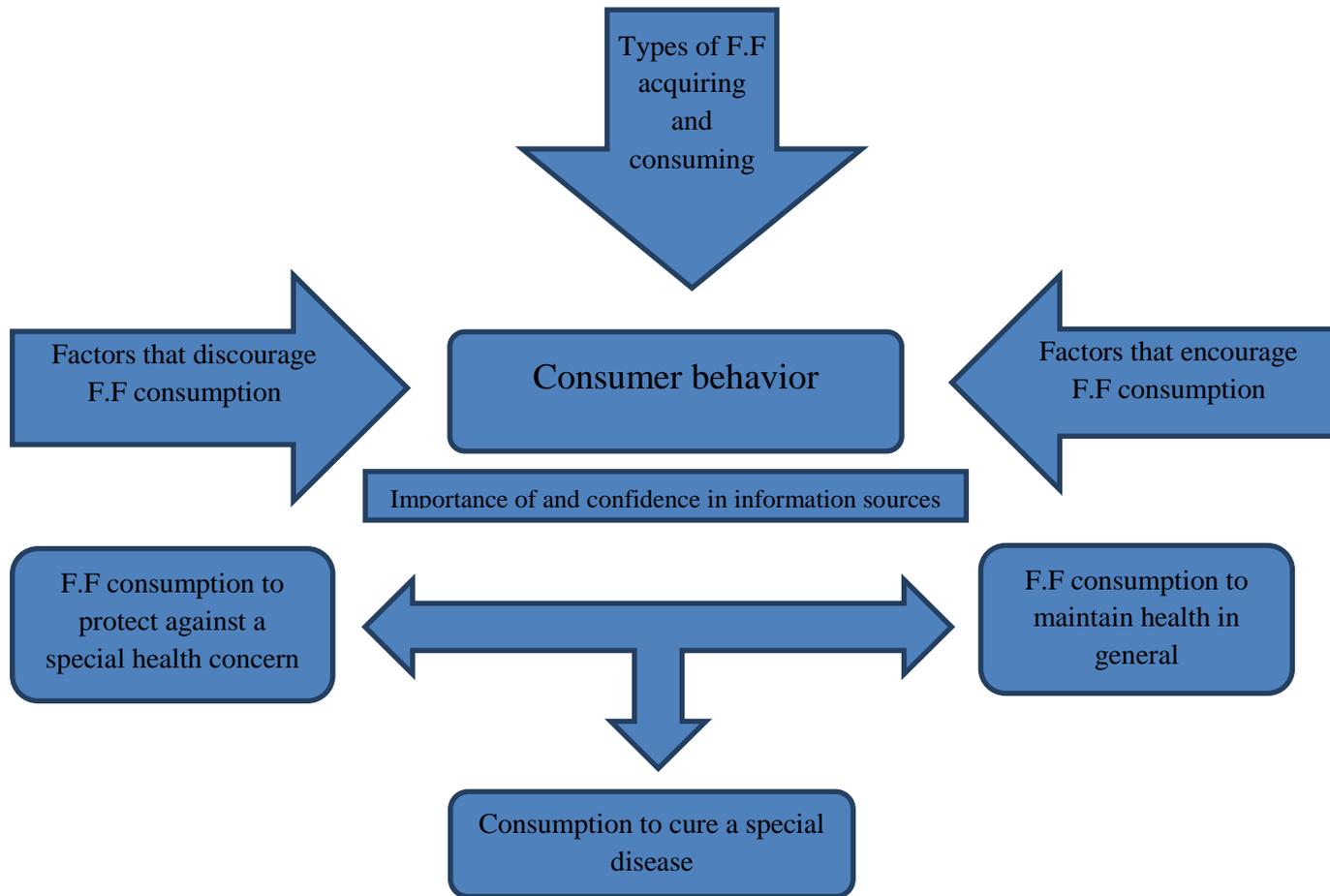
2.1 Analyzing consumer behavior

Several studies specialized in food economies in general have focused on estimating consumer willingness to pay (WTP) and factors that influence it, including the existence of health effects due to the consumption of a given food. This WTP is an important piece of information for producers, because it sheds lights on the directions they should follow in terms of developing their F.Fs, and presents projections about the expected volume of the product market. Such studies depends usually on models built upon surveys, which include several independent alternative assumptions (independent variables) that are all meant to be available for the consumer, thus monitoring his/her reaction for each of them¹⁰. The results are usually analyzed by one of specialized econometric softwares.

If we want to design a simple research matrix that deals with consumer behavior, the following one can be presented.

¹⁰ For instance, a study found that Italian consumer is willing to pay extra 0.13 € for dairy claimed to be more nutritious and beneficial in inherited oral stories, comparing with normal dairy (consumer WTP is 0.36 € against 0.23 € respectively), see (Moro et al, 2012).

Figure 1: an example of a simple research matrix that deals with F.F consumer behavior.



In general, health claims that highlight the food's positive contribution to life (namely, life marketing) is more successful than claims that focus on diseases (namely diseases marketing). That's to say: consumers prefer F.F that enhances their general health rather than F.F that reduces risk of diseases.

3. Barriers to F.F trade

It is apparent that F.F must be introduced in an adequate form that makes it smoothly accepted by consumers. Therefore, one primary step to be taken before developing F.F is to investigate common diseases in the targeted market as well as health concerns among consumers. Then F.F can be developed in a way that matches these diseases and concerns, which would make the food successful in that market. Furthermore, cultural barriers are among the most important difficulties that F.F marketing may face. For instance, fruits juice is an ideal example of F.F that is produced from healthy and regularly-consumed food commodities, yet its marketing could be hindered by a cultural barrier that is infused in consumers. That is, one study¹¹ indicated that the phrase "off-flavors" is limitedly linked with natural orange juice in consumers' minds, which will prohibit the consumer from accepting a cocktail product with a motto like "off-flavors". In the same way, not providing consumers with sufficient information or convincing proofs (as we have seen in the previous matrix in terms of the importance of and confidence in information sources) is another reason that hinders a successful marketing of F.Fs. In other words, F.F market development is largely linked to the level of consumers' knowledge about the food. In particular, accepting a specific kind of functional components in the food is linked to the awareness of its health effects. Furthermore, the importance of providing consumers with trustworthy information increases when the foods' functional characteristics don't show huge differences if compared to their conventional counterparts. In this respect, cereals¹² – particularly barley and oat- can be mentioned, where their health benefits can be utilized through different ways, either by producing F.F as new-fangled food products invented from cereals, or by using cereals as components of other food products, being made to feed children for example. Nevertheless, to successfully market such products, the knowledge on the quality advantages of cereals must be deepened through campaigns aiming at spreading bio-food culture among consumers. This can be materialized actually by adequate planned advertisements.

¹¹ Siro et al, 2008.

¹² Cereals can be used as source of indigestible carbohydrates, which can stimulate probiotics in the colon, where beneficial bacteria exist.

On the financial side, the noticeable difficulty is that the level of demand on the product differs from one market to another. Similarly, the regulations also differ from one country to another. Therefore, developing specialized markets is a good strategy to reduce export costs. In addition, providing with good-quality export services largely reduces the costs as well. On the other hand, it is important that trade decision-makers put efforts to harmonize trade regulations with the giant destination markets in order to limit the presence of trade barriers that may exist, and avoid repeating the same procedures – this can be done through the mutual recognition with the institutions that provide quality and safety certifications for food products in counterpart markets.

4. F.F that Syria produces

Both public and private sectors in Syria produce several kinds of F.Fs, but they are mainly produced for domestic consumption. In the past, Production-Affairs Department (which is under the Defense Ministry) had been producing several kinds of F.Fs, such as Al Zallouà honey (useful for increasing sexual fertility) and other kinds of honey and popular beverages (like Zhourat or “flowers’ beverage”); all have publicized medical characteristics. The department had been selling these products in domestic markets. In addition, one of the public sector companies produces an F.F for children¹³. Identically, some specialized private companies produce a lot of F.Fs, which are all characterized by low level of processing and minimum value added, where the processing provided from these companies ranges from the plain packing and packaging to the preparation of some composites that are claimed (by the companies) to be useful for specific purposes. For example, a private company that was established in 2004 produced a large number of food products, claiming that they are beneficial in terms of controlling immune system, liver diseases, children diseases, urinary system, ED treatment (erectile dysfunction), weight loss and hindering obesity, maintaining respiratory system, maintaining nervous system, treating chronic disease and endocrinal diseases¹⁴. At the same time, another private company produces extended collection of herbal composites, declaring that they are good for several health purposes. The company describes its work as a bio-medical industry, where it aims at “securing higher quality for human’s health and life, wherever the human is”¹⁵. The company is marketing its products in Syria and other Arab countries under an Arabic name, while it is marketing them in Germany and other

¹³ This is Cerelac that is being produced by TAFCO Company (under the Ministry on Industry).

¹⁴ <http://www.ibnalnafis.com/>

¹⁵ www.al-attar.net/

EU states, as well as North and South Americas and Australia under different name. The company also claims that it has obtained some quality certifications¹⁶. On the other hand, bread produced from oat, barley or mix of cereals (namely whole cereals, which is a comprehensive collection of cereals) is available in Syrian markets, where this food product is being used by diabetics (special sweets for diabetics are also available in Syrian markets), and also for colon infection and weight loss. Finally, it is worth mentioning that Syrian markets historically have always been maintaining the availability of F.F products, being sold in popular markets called “Bzouryah” (seeds’ shops) – these F.Fs are herbal, animal and forestry raw materials (not processed).

However, although Syria is a producer and exporter of a huge number of fruits and vegetables’ kinds, which can be categorized as F.Fs, there was no real attempt to market these kinds as F.Fs. This underlines the necessity to pay huge attention to this “stamp” in order to economically utilize it. In this respect, it is noticeable the General Establishment for Food Industries (GEFI), which belongs to the public sector, produces several food products that are either F.Fs or can be turned into F.F with low costs, but till the moment, any of its products hasn’t been introduced as F.F. For instance, the company produces cottonseeds oil, which has several medical advantages¹⁷, and also produces all kinds of dairy products, which can be a very good F.Fs if some additions and enhancements are implemented. Yet, as mentioned before, these characteristics haven’t been utilized or even highlighted.

5. F.Fs that Syria may produce

Syria is distinguished by its enormous biodiversity, resulted from its diverse natural environments, ranging from coast to Badia, including mountains and internal plains, which enable the country to produce several kinds of F.Fs. On the other hand, the Syrian heritage, which is rooted deeply in history and civilization, is very rich with inherited information that easily allow for a selection of F.Fs, and consequently processing these F.Fs and exporting the final products. Furthermore, the currently-produced foods that are not promoted as F.Fs, which were mentioned in the previous section, should also be considered; these foods can have their produced quantities increased and exported to the suitable markets.

¹⁶ http://www.syrianindustry.net/?page=company&op=display_company_details&company_id=16

¹⁷ For instance, a study conducted by Ain Shams University concluded that cottonseeds oil kills mouth tumors, see <http://www.ahram.org.eg/archive/Medicine-Science/News/36518.aspx>

The Eleventh Five-Year Plan for Economic and Social Development (2011-2015) invited for the utilization of new technologies and conclusions of scientific research in agricultural production activities, and called for the plantation of new crop varieties that have economic benefits. Government of Syria is concentrating on the plantation of medical and aromatic plants, which represent considerable part of the natural basis of F.Fs, all over Syria's land; this helps selecting plants-compositions with high value-added, and enhances the food security level. In this respect, the "agricultural production plan" for 2012 took into consideration some medical and aromatic species that are planted extensively, which are cumin, anise, black cumin, coriander, safflower and Damascene rose. The total planned area for these crops reached 77055 Ha, distributed among governorates of Rural Damascus, Homs, Hama, Edlib, Tartous, Aleppo, Al Raqqa and Al Hasakeh, besides Al Gab region¹⁸. Furthermore, a technical committee was formed from representatives of several concerned bodies related to Ministry of Agriculture, Damascus University and Ministry of Culture. The committee identified 236 medical and aromatic species spread on the Syrian land¹⁹. This demonstrates the formal interest in these rich plant resources that can be exploited in order to produce the F.Fs.

In this paper, the Syrian plantago was chosen as an ideal example - it is a Syrian common plant that has medical benefits. That is, it can be equipped as an F.F and then exported to foreign markets.

5.1 Case study (1) (plantago as an example)

Plantago is a plant with a lot of laxative fibers; therefore, it reduces the body's weight and hinders obesity. In addition, it is useful also for diabetics, besides that it reduces the cholesterol. Moreover, it is effective in terms of treating diseases of constipation, hemorrhoid and nervous colon²⁰.

The plant is of special importance in light of that obesity is a major causing factor for heart and diabetes diseases, as well as some cancers. In this sense, 22 million of under-5-years

¹⁸ <http://www.sana.sy/ara/185/2012/10/07/445790.htm>

¹⁹ The same source.

²⁰ Wikipedia Encyclopedia.

children in the world suffer from excessive weight or obesity²¹, and as it is well known, consuming F.F is the best method to tackle this problem²².

The consumable part of the plant is its leaves, where their boiled water is traditionally consumed like tea. Otherwise, these leaves can be cut and added either to the salads or to the vegetables prepared to be cooked²³. Notably, one private Syrian company is limitedly supplying processed plantago to Syrian markets – just for domestic consumption²⁴. Identically, one single²⁵ Russian company²⁶ is supplying southern Russian markets (Volga region or “Volgogradskaja”) with this product²⁷.

Picture 3: Plantago with panicle, and before blossom²⁸.



Moreover, plantago lanceolata (toothy plantago: the picture underneath) is spread in all Syrian regions, including coasts, mountains and plains, as well as roadsides and fields²⁹. The roots and seeds of this plantago can be used, besides its leaves. Usually its leaves are collected between May and September of each year³⁰.

²¹ For example, 25% of under-4-years children in Egypt suffer from obesity, see (Champagne, 2005) and see annex 2 to know the percentages of obesity among children in some countries.

²² In addition to plantago, obesity can be tackled by some popular foods that can be considered F.Fs, such as hyssop and sagebrush beverages, roots of licorice and fruits of tamarind and fennel.

²³

<http://www.ibnalnafis.com/ar/chemical/components/details/4/%D8%A3%D9%88%D8%B1%D8%A7%D9%82-%D9%84%D8%B3%D8%A7%D9%86-%D8%A7%D9%84%D8%AD%D9%85%D9%84>

²⁴ It is Ibbalnafis Company.

²⁵ The ALL.BIZ site, which presents details about all companies, products and services worldwide, doesn't indicate more than one company that markets the five kinds of plantago in Russian markets; this company is the one mentioned underneath.

²⁶ It is Колхоз-племзавод Казьминский, СПК or Farm-breeding plant Kazminsky, SEC.

²⁷ <http://www.ru.all.biz/ar/nbtt-lsan-alhml-bgc2382>

²⁸ Sources: <http://www.ibnalnafis.com/> and Wikipedia Encyclopedia.

²⁹ The Persian Medicine site <http://ar.parsiteb.com/news.php?nid=15077>

³⁰ The same source.

Picture 4: *Plantago lanceolata* (toothy plantago)³¹.



It is evident that marketing this common cheap Syrian plant (which can be a component of an exported Syrian F.F basket to “friend” markets) is a primary reasonable proposal, yet there is a need to expanding its study and further exploring the suggestion by concerned stakeholders (i.e. technical researchers, and public and private entities). For example, efforts can be put to establish a multi-partner project for producing, processing and exporting this plant. The possible “forms” can range from merely collecting, cleaning and equipping the leaves, to more complicated ones, which require more technical experiments and economic evaluations, such as crushing the leaves to be like tea (final product) after adding healthy flavors to them³², or preparing leaves’ juice and equipping it for exportation³³ in a way that makes it tasty and consumer-attractive. If any agreed on, it should be accompanied with huge advertising and promotional efforts to penetrate the targeted market.

6. Syrian regulations on F.F trade

There is no special regulation for F.F in Syria currently, which is a gap to be filled in the future, because (as we will see in next sections) developed countries have detailed regulations that deal with this issue. However, there is a set of laws and decisions the can cover (even though indirectly) F.F aspects. Some of these are as follows:

- Consumer protection law³⁴;
- Fraud Prevention decision³⁵;

³¹ The same source.

³² We have mentioned previously that one of the traditional ways to consume the plant is to drink its boiled water like tea.

³³ Syrian traditional popular medicine recommends drinking plantago’s leaves juice or drenched leaves’ water to treat stomach acidity or bad digestion.

³⁴ Law No. 34, issued by the Republic Presidency in 10-3-2008.

- Decision on conditions and rules of labeling the product with sign of conformity³⁶.
- Food Safety law³⁷; and
- Bio-Safety law³⁸.

For example, the bio-Safety law deals with the “food additive” defining it as a material to be added during the food preparation in order to provide it with specific characteristics, or influence its characteristics in a desired way. The law gives the eligibility to “set the conditions for applying and using additives in order to avoid fraud in terms of food quality, quantity, characteristic, value, structure, impact and advantages” to the minister of internal trade, in coordination with concerning bodies³⁹. Furthermore, according to Fraud Prevention decision, “exaggerated claims in a way that disagrees with facts and reality in order to encourage consumer to purchase the product or receive the service are prohibited⁴⁰.” Lastly, Bio-Safety law, which was launched recently in 2010, aims at “securing safe level for human, animal and plant health by disciplining inward and outward movement of genetically modified organisms (GMOs) and their products, as well as their transferring, producing, exchanging and using.” The law charges the Ministry of Health to execute “all measures related to monitoring and using GMOs and their products, which are prepared for human food consumption and medical and therapeutic issues⁴¹.” In this sense, it is important to note that some kinds of F.Fs are GMOs, which makes them automatically covered by this law.

In general, it is apparent that these laws and decisions cover largely the F.F issue; they deal with the additives, they prohibit the fraud advertisements and cheating promotion on claimed health advantages, and they tackle the issue of trading GMOs made for health purposes. Nevertheless, these regulations are still unsatisfactory; they don’t directly and independently deal with F.F, and they don’t contain any specific criteria for F.F aspects, leaving the evaluation of any certain case to the executive officials – this leaves the door open for multiple views on the same case.

³⁵ Decision No. 1637, issued by Ministry of Economy and Commerce in 10-3-2008

³⁶ Decision (no number), issued by Ministry of Economy and Commerce in 8-6-2008

³⁷ Law No. 19, issued by the Republic Presidency in 28-10-2008.

³⁸ Law No. 24, issued by the Republic Presidency in 18-10-2012.

³⁹ Attasharukya website.

⁴⁰ Decision No. 1637 announced by Ministry of Economy in 8-6-2008, cited from Syrian Consumer Protection Association website.

⁴¹ Law No. 24, issued by the Republic Presidency in 18-10-2012, Attasharukya website.

Some examples of F.F regulation in some developed economies are shown in the following sections.

6.1 Examples of developed economies' regulations on F.F

6.1.1 Canadian regulations

Canada's Food and Drugs Act legitimizes and regulates trading F.Fs and natural health products (NHPs). Health Agency of Canada is the responsible body for following up the law's application. The agency is a federal entity and is the main responsible national body for health aspects. Companies that market F.F and NHPs must have the agency's licensing for a product which they intend to market. In this framework, they have to provide the agency with detailed information about the product's components that have health effects, how effective these components are, what are the other components that don't have health effects (this is for manufactured products), what are the objectives of consuming the product, and what are the company's recommendations in terms of the product⁴².

6.1.2 US regulations

US regulations on FFs issue is focused on the evidence that support or prove health claims concerning a given F.F. The "US Food and Drug Administration" (FDA) legitimizes only five types of health claims concerning the F.Fs. Those who produce F.Fs can only display one or more of these five types on their products' stickers. These types are as follows⁴³:

- Nutrient content claims indicate the presence of a specific nutrient at a certain level.
- Structure and function claims describe the effect of dietary components on the normal structure or function of the body.
- Dietary guidance claims describe the health benefits of broad categories of foods or diets and do not refer to a disease or a health related condition.
- Qualified health claims convey a developing relationship between components in the diet and reduced risk of disease, as reviewed by the FDA and supported by the weight of credible scientific evidence available.

⁴² Siro et al, 2008.

⁴³ Cited from International Food Information Council Foundation, 2011.

- Health claims confirm a relationship between components in the diet and reduced risk of disease or health condition, as approved by FDA and supported by significant scientific agreement.

Moreover, to have these claims proved correct, there must be credible researches, published and reliable, confirming the health claims made for food or food component. This makes the consumers confident that strict scientific criteria are applied to approve these health claims.

6.1.3 EU regulations

The EU regulations are still lacking a European definition for the F.F; nevertheless, there are harmonized regulations among EU states on how to deal with health claims. Identically, food components, food products and plants are dealt with on the national level in each of the EU states⁴⁴. The EU regulations require those who produce foods that have health benefits to stick a printed paper on the product, displaying information about the food components. In addition, the regulations imply that health claims must be supported by generally acceptable scientific data, yet they mustn't be disinformative. Furthermore, the claims must be pre-approved on the EU level, they mustn't increase doubts about other foods' safety level, and they mustn't encourage excessive consumption of the F.F product⁴⁵.

7. Potential markets for Syrian F.F products

After the series of economic sanctions being imposed by some Arab countries and the EU on Syria in the event of recent crisis, Syrian government decided to change the country's trade orientation, announcing a new orientation called "stepping easterly". That is, promoting trade relationships with countries that maintained their ties with Syria during the crisis (most of them locate in the east). In this framework, encouraging the exportation of Syrian F.F to these countries is extremely a reasonable suggestion, especially in light of the indications that emerging economies (particularly BRICS⁴⁶ countries) are promising markets for F.F products on the global level - as mentioned previously in this paper.

In the following section, we will focus on the Russian market as a case study. This market was chosen for several reasons; for example, it's a very broad market, and it is a demanding

⁴⁴ <http://www.ncbi.nlm.nih.gov/pubmed/22117621>

⁴⁵ Pravst, 2012.

⁴⁶ The first Latin letters of names of the five countries that have the highest economic growth rate in the world, which are Brazil, Russia, India, China and South Africa.

market on F.F products (as will be shown). Furthermore, Russia is one of the most important countries that Syria has been trying to strengthen its trade relations with them in the context of its new trade orientation. In addition, Russia is an ideal market for Syrian F.F exports if compared to some other “oriental” countries, where the opportunity for Syrian F.Fs seems less “shiny”⁴⁷.

7.1 Case study (2): Russian market

7.1.1 Analyzing Russian market demand on F.F products

According to the 2012 census, total number of Russian populations reached 142 million⁴⁸; this makes Russia a giant market on the global level. GDP per capita growth rate in Russia suggests a great economic flourish in the future. One study estimated the value of Russian F.F market at US\$ 75 million in 2004⁴⁹, while another study in 2009 estimated the value of Russian health and wellness sector at US\$ 11.2 billion, of which US\$5.6 billion was for natural healthy foods, US\$ 3.3 billion for preferred healthy food⁵⁰ (or the so-called *better for you*), and US\$ 1.4 billion for Fortified F.Fs⁵¹. This indicates that F.F sector has grown largely during only five years. The sector is still enjoying substantial positive shifts, where “International European Monitor”⁵² points that Russian citizens are interested in their wellness and prefer to consume food products of high quality with extra nutritional value. A study conducted by a global giant food company in 2008 indicated that 65% of Russian people prefer fortified food products, and mainly, most F.F consumers are the middle-income class, who are willing to pay higher prices in order to purchase healthy food for themselves and their children⁵³.

On the other hand, it is well known that Russian people are interested in their looks, and do prefer socially the slim body; therefore, F.Fs that contribute in preventing obesity are of great popularity in Russia. In this respect, the demand on herbal F.Fs is growing increasingly, as illustrated in the following figure.

⁴⁷ For instance, a working paper produced by the National Agricultural Policy Center (NAPC) revealed that there is a huge technical difficulty to increase the volume of Syrian agricultural exports to Iran due to the weak complementarity between the structure of Syrian production and the structure of Iranian consumption. See (Babili, 2012).

⁴⁸ According to a report published by Canadian International Markets Bureau, see (The Government of Canada, 2011).

⁴⁹ Williams et al, 2006.

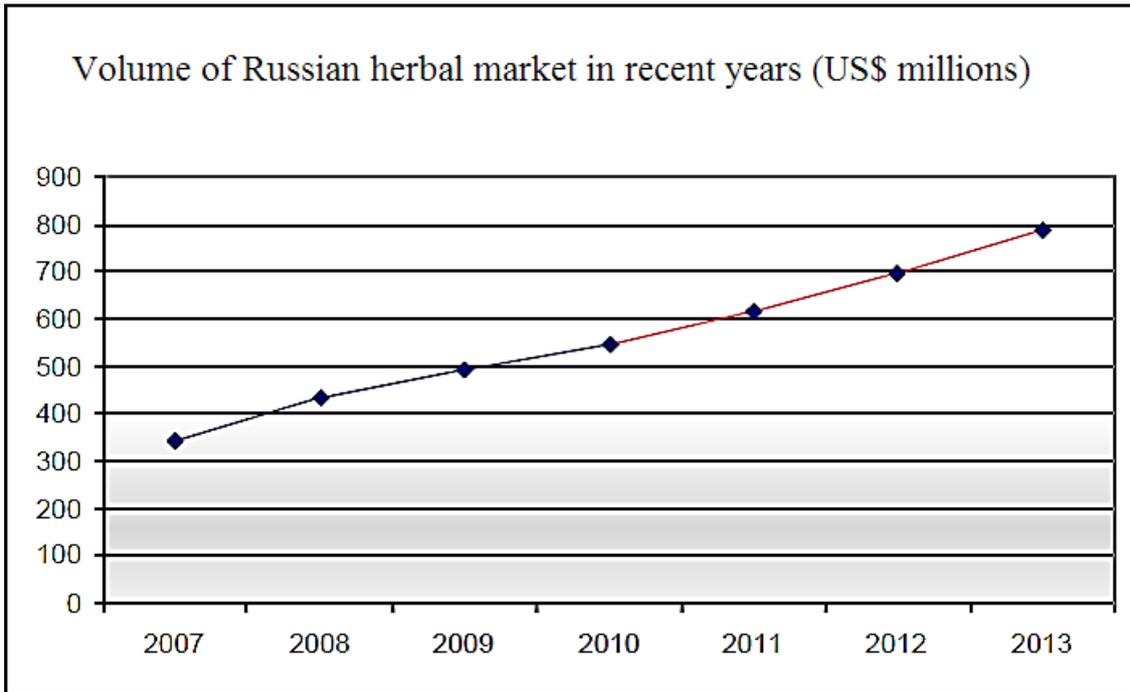
⁵⁰ This category includes foods that had their harmful components either removed or largely reduced; these components are such as sugar or cholesterols.

⁵¹ The Government of Canada, 2011.

⁵² www.euromonitor.com

⁵³ The Government of Canada, 2011.

Figure 2: Volume of Russian herbal market in recent years (statistics and estimations).

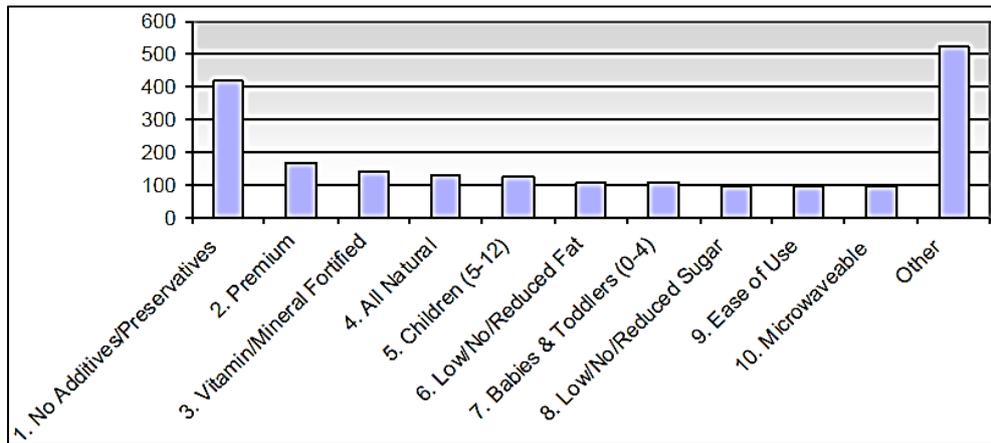


Source: Canadian International Markets Bureau, cited from International European Monitor.

It should be noted that the large increase in expenditure on F.Fs by Russian people is a signal that implies the presence of promising market for Syrian producers, which they should exploit it. In addition, heart diseases represent a huge health concern for Russian people⁵⁴; this should be met by affording F.Fs that contribute to the heart health maintenance. In this sense, it is important to mention that the more the way used to introduce these products is attractive, the more market access and utilization is successful. The following figure shows the numbers of new F.F products that appeared in Russian markets in 2009, classified according to the producers and importers claims.

Figure 3: F.F products that appeared in Russian markets in 2009, classified according to the producers & importers claims.

⁵⁴ “Heart diseases” is the major reason for deaths in Russia, where deaths occur due to heart diseases represent 50% of total deaths.



Source: Source: Canadian International Markets Bureau, cited from the Global New Products Database (www.gnpd.com).

On the other hand, it is common in Russia to have the probiotics added as nutritional supplements or health-beneficial additives to various foods⁵⁵.

7.1.2 The ability of Russian market to absorb a specific Syrian F.F

To examine the ability of Russian markets to absorb a specific Syrian F.F, it is recommended to conduct a statistical survey in the targeted region. Therefore, a special questionnaire should be designed to help drawing a clear image on how successful this product would be in this market, and what are the desired characteristics in terms of such product ...etc. This all is to be clarified by the presumed consumer's answers. For example, in case we want to market a given F.F product in Russia's Center region⁵⁶, it is highly recommended to primarily conduct a survey in that region, consulting consumers through a questionnaire that may include the following questions:

- personal questions about age, sex, location, level of education, life style, work and level of income
- health status of the surveyed person, and his/her health concerns
- general questions about his/her knowledge on F.F and its benefits, and special questions in regard to the F.F to be marketed in the region
- what are F.Fs that he/she currently consumes, and how much does he/she consume
- introducing a number of F.Fs from different sources and of several kinds, and asking the consumer about his/her preferences

⁵⁵ Shenderov, 2011.

⁵⁶ Russia consists of 7 geographic regions, which are Far East, Siberia, Urals, North-West, Volga, Russian Center and Russian South.

- How far is he/she willing to pay an extra premium for the choices he/she prefers

Consequently, after collecting the questionnaires, which should have been distributed among a representative sample of targeted consumers, the decision to start the project, modify it, or start looking for another F.F that is more acceptable by consumers in this region can be taken in light of the obtained results.

7.1.3 Russian regulations on F.Fs

It should be clarified firstly that the term “functional food” has appeared for the first time in the Russian literature in 1994. In addition, the Russian legislations defined the F.Fs as “foods for systematic (regular) use in nutrition ration composition by all groups of healthy inhabitants maintaining and improving state of health and reducing risk of nutrition-associated diseases via functional nutrition ingredients that are present in such products.” Furthermore, according to Russian legislation introduced in 2005, “any articles of food may be related to functional foods if the content of health benefit macro- and micronutrients in the product is within 10-50% of established [Reference Daily Intakes] RDI⁵⁸ for healthy inhabitants⁵⁹.” Russian legislations on F.Fs are largely similar to the US legislations on food organic and structural health claims, as well as the US legislation on dietary trademarks. This similarity applies in terms of information and data related to the functional or structural claim. Moreover, the Russian legislation stipulates that the approval of the concerned governmental regulator agency on using the nutritional supplements (it calls them nutraceuticals, which are actually F.Fs) must be in place prior to marketing them. Yet, the debate on the legislative evidence in the context of F.Fs is still taking place in Russia today.

7.1.4 What F.Fs can Syria export to the Russian market?

All kinds of F.Fs being produced in Syria are demandable in Russian markets. In this framework, F.Fs that help protecting from heart diseases would be very suitable for these markets, considering that heart diseases are the main reason for death in Russia, as mentioned previously. Identically, F.Fs that limit obesity are also proper for Russian markets, in light of

⁵⁷ Based on Shenderov, 2011.

⁵⁸ In 2004, the Russian institute of nutrition published RDI-related data, including more than 200 bio-active substances, such as vitamins, macronutrients, micronutrients, plant antioxidants, organic acids, polysaccharides, plant flavonoids, prebiotics and others of which can be found in food stuffs (based on Shenderov, 2011).

⁵⁹ To avoid side effects, the entire amount of functional ingredients consumed by a healthy person in one day must not exceed the RDI.

the social Russian traditions, and particularly considering obesity high-rates among Russian children⁶⁰. Lastly, dairy functional products are very demanded in Russian markets, even that some studies consider dairy functional products the engine of Russian F.F sector⁶¹.

Furthermore, in addition to the plantago proposal, which it is important to be looked into further by technical bodies, discovering other plant and animal kinds that can offer F.Fs exportable to Russia and others is important as well. On the other hand, one important concrete step is conducting studies in the Russian market by concerned bodies in Syria's agriculture, health and food sectors (this can be done also in cooperation with the Russian counterpart bodies) in order to know the Russian consumer's desires and requirements, as mentioned before.

8. Conclusion

F.F is a category that comprises an extended spectrum of foods and beverages, ranging from natural foods that contain functional components like lycopene in tomato and Omega-3 fatty acids in seafood, to fortified foods like calcium-fortified orange juice or cereals fortified with vitamins and minerals. Consuming F.Fs in the context of the daily dietary system can reduce the risk of health problems like cancers, artery and heart diseases, stomach and intestines diseases, diseases related to menopause and osteoporosis, and eye diseases. In addition, medical research has proved that F.Fs strengthen the immune system in the body⁶². Furthermore, F.Fs protect from hereditary diseases, which are present in certain human genetic-groups, and contribute in enhancing neural activity and maintaining child's health⁶³.

As mentioned before, Syrian Arab Republic has a rich biodiversity, which paves the way for developing the F.F sector in a remarkable way. However, there are several required conditions for the development of the sector, such as a sustainable management plane for exploiting these bio-resources, in order to avoid depletion, and deterioration of this environmental wealth. Moreover, activating laws that protect intellectual property rights (including biodiversity) is another condition. This should be done in a way that allows for equal sharing of benefits between local communities that produce F.Fs' natural basis on the

⁶⁰ Please see annex 2 to have an idea about the obesity rate among Russian children.

⁶¹ Williams et al, 2006.

⁶² For instance, look at the impact of vitamin A, which is found in eggs, or the impact of zinc, which is found in some leaf vegetables.

⁶³ For example, F.Fs help controlling the child's weight; they help with reaching a healthy weight and maintaining it.

one hand and final producers and exporters on the other hand. Identically, a real partnership among scientific research centers, the private sector with its investments and projects, and local communities that produce F.Fs' natural basis should be established. This is particularly important because the success of any investment or project is basically determined by the presence of satisfactory scientific evidence (to establish the health claims), besides the ability to market F.F smartly among targeted consumers. In this respect, identifying the right destination markets for F.Fs products requires special research that counts on statistical surveys and tangible evidence. Thereafter, affording advanced export services, which considerably reduce costs, and setting technical and legal arrangements with governments in the destination markets (e.g. mutual conformity to avoid health and technical barriers to trade⁶⁴, and, if exists, tariff reduction or elimination) should be at place.

In addition, it should be taken into account that the consumer's first impression is decisive in terms of forming his/her final attitude towards the product⁶⁵. Accordingly, if the consumer's first impression is bad, the product marketing will face extreme difficulty later, and if the consumer's first impression is good, the doors of success will be opened in the targeted market. Therefore, it is important to prepare well in order to gain the consumer confidence in the functional product. This can be achieved by tailored scientific research efforts and well-established media campaigns, which all contribute ultimately in spreading bio-food culture among the consumers.

Furthermore, despite the fact that identifying any kind of F.F requires mutual research between agricultural and medical sectors (which underscores the necessity to conduct such studies in the future), this paper has presented a proposed example of a common Syrian plant that can be an F.F and can have good markets in "friend countries", particularly Russia – this plant is plantago.

Moreover, although this paper encourages perceiving Syrian traditional foods as F.Fs, where they must be promoted in international friend markets, and "export opportunities" for them must be investigated there, the paper also encourages conducting active research aimed at producing kinds of fortified foods and identifying export opportunities for them. This will

⁶⁴ This means harmonizing national procedures with technical and health requirements of major destination markets to limit the existence of trade barriers and avoid the repetition of the same procedure; this can be achieved by mutual recognition of institutions that issue certificates of conformity in terms of quality and food safety.

⁶⁵ Mansour and Rashaydeh, 2011.

have substantial positive impact on food industries sector, thus opening the door for agricultural investments, where F.F can be an attractive field for investors. Subsequently, this would activate the economic cycle of agriculture and food-industries sectors.

Lastly, it is worth to mention that attention must always be paid to each of targeted consumer's requirements on the one hand, and related scientific research on the other hand.

9. Recommendations

- Emphasizing F.F production and exportation, which could promote general wealth, and spreading bio-food culture among consumers in targeted markets by launching well established media campaigns.
- Taking advantage of GEFI's experience, and building upon it in order to produce and export F.Fs, which helps GEFI to move away from the losses⁶⁶ it experienced recently due to the sanctions imposed on Syria.
- Putting efforts to harmonize trade regulations with targeted destination markets by mutual recognition with the institutions that provide quality and safety certifications for food products in those markets.
- Putting efforts to have Syrian F.F products promoted in smart and attractive way, and putting efforts to gain consumers' confidence, and develop specialized markets and afford advanced export services.
- Setting a sustainable management plane for exploiting these bio-resources, in order to avoid unsustainable depletion, and deterioration of this environmental wealth.
- Activating laws that protect intellectual property rights (including biodiversity) in a way that allows for equal sharing of benefits between local communities which produce F.Fs' natural basis on the one hand, and final F.F producers and exporters on the other hand.
- Establishing a real partnership among scientific research centers, the private sector with its investments and projects, and local communities that produce F.Fs' natural basis; supporting scientific research to figure out species proper for production and exportation, and; developing incentives for concerned companies to encourage them to invest in F.F research and development.

⁶⁶ Its losses reached about 5.7 billion S.P due to the sanctions imposed on Syria, (Aliqtisadi Online).

- Taking advantage of free trade agreements (FTAs) signed with “friend” countries to promote F.F trade, and asking to review these FTAs when necessary.

10. Policy implications

- Exploring GEFI’s products, pointing out those which can be considered F.Fs; and putting efforts to promote them as F.Fs, considering the possibility to take serious step in this direction.
- Examining the possibility of producing, processing and exporting plantago, within a basket of exported Syrian F.Fs to the “friend” markets in a more holistic approach.
- Putting efforts on the mid and long term to develop local dairy products to become F.Fs that can be exported under this title⁶⁷.
- Focusing on examining the possibility of exporting F.Fs that help maintaining heart health or help tackling the obesity problem to the Russian markets; and examining the possibility to export Syrian dairy products as F.Fs to these markets.
- Focusing scientific research on exploring the role of conventional nutrients and identifying their optimal levels, in which they become more suitable for different age and genetic groups; and considering the utilization of genomics, and the possibility to link it with molecular nutrition.
- Depending on accurate standards when health claims are to be approved; in this respect, GRAE⁶⁸ panel or SSA⁶⁹ and/or WOSE⁷⁰ criteria can be proposed.

⁶⁷ A working paper published recently by the NAPC has found that Syrian cheese has strong competitive advantage in either of the Lebanese and Iraqi markets, see (Babili, 2012).

⁶⁸ It stands for “generally recognized as efficacious”. This is a formal US classification of additives considered safe and healthy; thus, there is no need for “Food, Drug, and Cosmetic Act” to be applied on them. There are three cases for an additive to be classified as safe and healthy. One of these cases is when the producer presents all scientific research related to his/her product, including a list of experts ready to review any health concerns in connection with the product.

⁶⁹ It stands for “significant scientific agreement”. This is applicable for both conventional foods and additives. A set of requirements and conditions is needed for a food to be considered having an SSA.

⁷⁰ It stands for “weight of the scientific evidence”. This standard is less strict than the previous one. The food that meets WOSE standard can be marketed not upon that the health claims are approved but upon the discretion.

Annexes

Annex 1: Brief table about Madani's classification of F.Fs according to their sources⁷¹.

Phytochemicals			Zoochemicals			Probiotics		
Material	Source	Function	Material	Source	Function	Material	Source	Function
Carotenes	Carrots and Others	Protection from cancer	Omega 3 Fatty Acids	Fish	Maintaining mental growth	Lacto-bacillus	Beneficial micro-organisms	Enhancing digestion and promoting immunity
Flavonoids	Apples and others	Protection from heart diseases	Conjugated Linoleic Acid	Ruminants products	Weight loss and protection from diabetes	Bifidobacterium	Beneficial micro-organisms	Enhancing digestion and promoting immunity
Phytoestrogens	Legume and cereals	Protection from osteoporosis				Prebiotics (in case prebiotics are consumed with probiotics, the food is called Symbiotic)	Beneficial micro-organisms	Dismantling saccharide that can't be digested in small intestines
Phytosterols	Oil-seeds	Protection from cancer						
Saponins	Legume and others	Protection from cancer						
Organosulfur Compounds	Onion and garlic	Cleansing intestines and reducing cholesterol						

⁷¹ Al Sharq Al Awsat 10-9-2010.

Annex 2: Historical view of obesity percentage among children under-8-years in some countries⁷².

	USA (1988-1991)	China (1993)	Russia (1994-1995)	South Africa (1994)	Brazil (1989)
Females	24.2%	12.2%	17.8%	20.3%	10.5%
Males	21.3%	14.1%	25.6%	25%	12.8%

⁷² Champagne, 2005.

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