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Considerations for developing a generalized model to produce and characterize pasta with high nutritional value

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Abstract

Innovation is one that delivers solutions to food security challenges (www.cgiar.org, Consultative Group on International Agricultural Research, CGIAR). Food security is a component of the concept of nutrition security (www.ifad.org, The International Fund for Agricultural Development, IFAD). In this context, the aim of our study was to elaborate a generalized model to produce new functional pasta with high nutritional value, as safe food, nutritionally optimized [7, 8].

Keywords: pasta, nutritional value, functional food

1. Introduction

Food security means ensuring human needs for both calories and nutrients, for optimal health. The major theme globally addressed at the Global Forum for Innovation in Agriculture (Abu Dhabi, February 3th, 2014) and at the summit "Feeding the World" ("*Food for mankind*", February 15, 2014) was: sustainable solutions to the global crisis [7, 8].

Agricultural research for development is the engine that drives innovation. The statistics for the future are alarming: in 2050, Earth's population will reach nine billion people. Population growth, migration from rural to urban areas and climate change are factors that increase pressure on food production, without destroying the planet. And this food must be not only quantity sufficient to provide the necessary calories for daily consumption, but also has nutritional value [7, 8].

The George Mateljan Foundation (www. whfoods.com, The World's Healthiest Foods), tooks into account the existing food and classified top 100 considered the healthiest food, based on the following criterias: nutrient density (rich source of essential nutrients for health / optimal diet). Density is a measure of the nutritional intake of the nutrient in a food compared to the calories. A food is more dense in nutrients if the nutrient level is higher relative to the number of calories. The concept of "nutrient density" determines which food has high nutritional value; complex food (the healthiest foods are complex in terms of natural wealth in nutrients; they have not been obtained by high processing and do not contain synthetic, artificial or irradiated elements); familiar food (the healthiest foods must be shared daily, and a healthy diet should include fruits, vegetables, whole grains, nuts and seeds, meat without fat, fish, olive oil, herbs and spices, familiar

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to most people); fresh market availability; pleasant taste [4,5,9].

The cereals included in the top 100 healthiest foods based on nutritional profiles, are: barley, brown rice, buckwheat, millet, oats, quinoa, rye, durum wheat (The Food Processor, Version 10.12.0, ESHA Research, Salem, Oregon, USA) [1,2,6].

2. 2. Research methodology

The research methodology aims to address two main areas of study: on the one hand research on obtaining food products – pasta – from unconventional flours, in the context of international concerns on food security and on the other hand the design of new functional pasta, to increase the nutritional value of such food products with health benefits to consumers [3].

The proposed research methodology will lead to the principal objective of the project through the production and characterization of new types of pasta from unconventional flours, as an alternative to traditional wheat flour, and with added superior nutritionally raw materials (raw materials with high nutritional value). These new products are subjected to sensory and physic-chemical analyses.

We propose the following ***steps order***:

1. *Research on obtaining food* – pasta – *with high nutritional value* in the context of international consumer health concerns:

    1.1. Comparative screening of nutrition policies

    1.2. Analysis of the current state of the food chain and identifying trends

Outcomes: ***interpretations and correlations of national and international food policies***.

2. *Developing specific food matrix* and the pilot scale technologies:

    2.1. Establishing the necessary raw materials and ingredients

    2.2. Setting recipes and production technologies

    2.3. Process modelling at pilot scale

    2.4. Complex characterization of products

    2.5. Quality evaluation based on consumer perception

    2.6. Analysis of technological hazards

    2.7. Technological transfer to potential industrial beneficiaries.

Outcomes: ***recipes and production technologies for new products*** - pasta with high nutritional value from different unconventional flours, their characterization, risks characterization, presentation manual of the new products.

3. *Consumer education* on the impact of nutrition on health and promotion to consume food with high nutritional value:

    3.1. Workshops
    3.2. Promotion materials

Outcomes: ***presentation of the new products***.

4. *Assessment of market segment*:

    4.1. Generating strategies to promote their products
    4.2. Market studies on the acceptability of these products

Outcomes: the ***promotion strategy*** for the new products.

Figure 1 shows an example of a GANTT diagram to follow the presented steps.

3. Conclusions

To obtain food with high nutritional value has to go out and browse the following specific objectives:

I. Developing the specific food matrix and technologies for producing pasta with high nutritional value at laboratory level.
II. Educating consumers about the impact of nutrition on health and promote consumption of foods with high nutritional value.
III. Assessing the market segment targeted by the new obtained products.

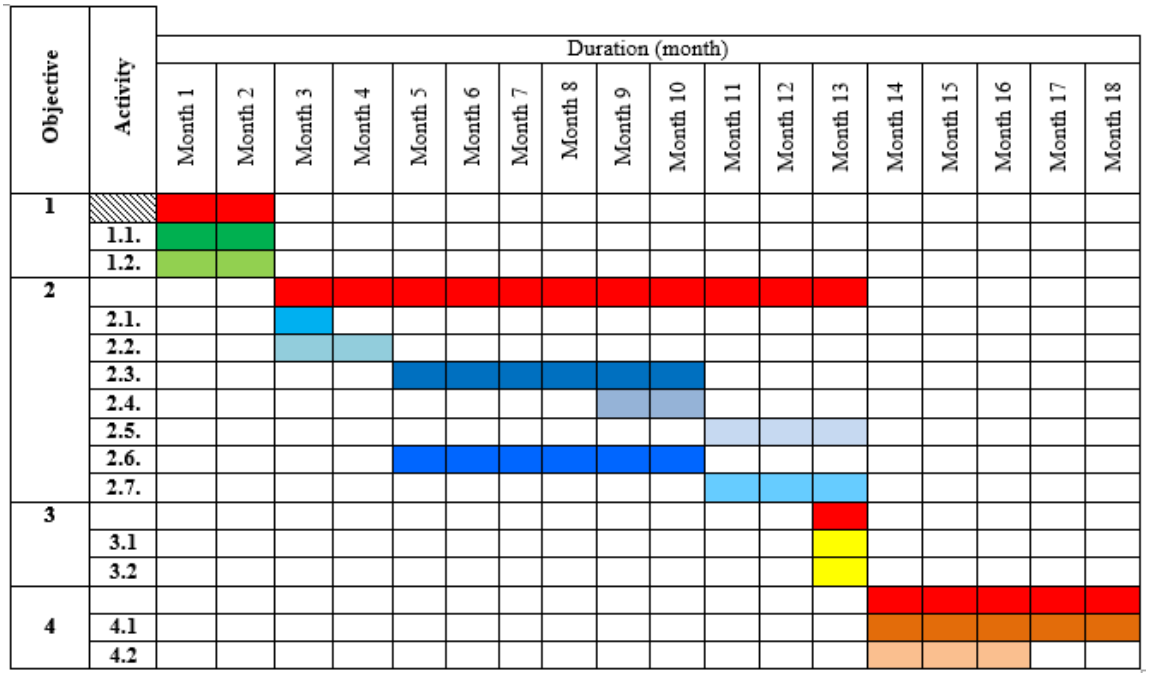

Figure 1. GANTT Diagram (example)

The element of originality and innovation consists in developing new food products with high nutritional value with beneficial health properties.

Contributions will be made to develop research on the production of safe food, nutritionally optimized, and exploitation of scientific results at industrial level.

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Compliance with Ethics Requirements. Authors declare that they respect the journal's ethics requirements. Authors declare that they have no conflict of interest and all procedures involving human / or animal subjects (if exist) respect the specific regulation and standards.

References

1. Alvarez-Jubete, L., Wijngaard, H., Arendt, E.K., Gallagher, E., Polyphenol composition and in vitro antioxidant activity of amaranth, quinoa buckwheat and wheat as affected by sprouting and baking, *Food Chemistry* **2010**, *119*, 770
2. Aurore, G., Parfait, B., Fahrasmane, L., Bananas, raw materials for making processed food products, *Trends in Food Science & Technology* **2009**, *20*(2), 78
3. Rinovetz, A., Mateescu, C., Trasca, T., Jianu, C., Rinovetz, Zorica Adina, Jianu, I., Dry post-fractionation rheological properties of solid fractions of pork lard, *Buletin USAMV-CJ*, **2006**, *63*, ISSN 1454-2382
4. Hernandez-Nava, R.G., Berrios, J. de J., Pan, J., Osorio-Diaz, P., Bello-Perez, L.A., Development and characterization of spaghetti with high resistant starch content supplemented with banana starch, *Food Science and Technology International* **2009**, *15*(1), 73
5. Liu, R.H., Whole grain phytochemicals and health, *Journal of Cereal Science* **2007**, *46*, 207
6. Rădoi, P.B., Alexa, Ersilia, Radulov, Isidora, Morvay, A., Stroe Mihai, Cristiana Sorina, Trașcă, T.-I., Total Phenolic, Cinnamic Acids and Selected Microelements in Gluten Free Pasta Fortified with Banana, *Revista de Chimie* **2015**, *66*(8), 1162-1165
7. EFSA Panel on Dietic Products, Nutrition, and Alergies (NDA); Scientific Opinion on the substantiation of a health claim related to barly beta-glucans and lovering of blood cholesterol and reduced risk of (coronary) heart desease pursuant to Article 14 oh Regulation (EC) No. 1924/2006, *EFSA Journal* **2011**, *9*(12), 2471, doi:10.2903/j.efsa. 2011.2471
8. www.cgiar.org
9. www.ifad.org
10. www.whfoods.com