RESEARCHS CONCERNING THE INCREASING OF THE VITAMINS AT THE CHICKEN PRODUCTS ENRICHED WITH NUTRIENTS - CASE STUDY AT THE SC AVI-TOP SA IAŞI ROMANIA -

Steluţa RADU[1], **A. CHIRAN**[1],
Elena GÎNDU[1], **Benedicta DROBOTĂ**[1],
A.F. JITĂREANU[1]
[1] Universitatea de Ştiinţe Agricole şi Medicină Veterinară Iaşi
e-mail: r_stela_222@yahoo.com

The level of nutrients of the food products generates the quality of them and the essential methode for the rezolving of the consummer's. The study of the researching welcome of the actual tendency by the supplementing of the processing food.

The quality of food products is a means used for a certain purpose, according to which a company or an economic agent exists on the market and it can remain competitive continuously although it develops in a changing environment.

In this context, the quality through its capacity to stimulate the company not only from inside but also from outside and the importance given to the functioning in a network(interpersonal organizational cooperation) may contribute to the identification of some favorable industrial niches, to the formation of some synergy –sustained structures, to the development of innovation (facilitating the implementation of innovations in the products used and marketed/merchandised), to the promotion of new technologies and to the introduction of the informative IT type systems.

Besides the scientific research, the innovation program consists of a series of projects which promote the innovative management techniques which need an integrated approach similar to the general strategy of the organization.

***Key words**: food, additional materials , functional food*

Through an innovative design it is possible to assure the competitiveness of any food products: both should be considered when elaborating the policy in the field of quality for which it is necessary the development of the partnership/cooperation between the University of the Agricultural Sciences and Veterinary from Iasi and the production unit SC AVI TOP SA in Războieni, as well as other production units with a view to developing the synergy and effective communication channels between their activities whose results rely on each other. Thus, it will be possible to solve one of the important problems, the fast transfer of

the scientific findings/results towards the current production activities through improve the research about the quantification and optimization of nutritive value using the nutritive added substances into a new technological recipes with poultry meat.

MATERIAL AND METHOD

For an adequate/suitable human nutrition it has been established various criteria of choosing the food, such as: the "self selection", the "specific cultural model", the "rational nutrition" So, the rational nutrition becomes a problem of the people education. Although this has been a requirement since the 20th century, there are still countries whose population suffer from malnutrition owing to meat and sweets excess as well as to the deficit in cereals, fruit and vegetables. It is also important the source/nature of the nutritive components, either vegetal or animal, according to which their digestion is either faster or slower. Thus, the individual prefers the kind of food which assures a long term satiety which is unfavourable for the digestion process and the metabolism of nutritive substances, generally leading to diseases such as: diabetics, obesity, high blood pressure, cancer.

During the standardized stage of the agroalimentary products, namely the chicken products, the product and production parameters will be established so as to realize an efficient quality control of the activity carried on.

The finished product specifications refer to the way the raw materials have been included in that product, to the consumers' requirements and the requirements of the existing laws/regulations. Some of the qualitative specifications of the finished product are: the sensory characteristics (appearance, shape, color, texture, flaws, fragrance, smell, taste), the physico-chemical characteristics of quality, the use of the food additives, microbiological characteristics of quality, strange bodies, the wrapping/package integrity, label aspect, product lifespan.

The methods used to measure the quality characteristics can fall into two categories: measuring methods for physical characteristics, which are definite and refer to color, taste, texture and viscosity; measuring methods for the "hidden" characteristics which cannot be seen or felt; they can be measured only by chemical and microbiological standard procedures (nutritive substances, dyestuff /coloring agents, additives, pesticides, toxic substances).

The recipes proposes for the research are the following: 1. MEAT POLUTRY WITH FRUITS - Poultry meat 400 g, onion 50 g, orange juice 30 ml, apricot 60 g, raisins 50 g, curry 5 g, oil 20 ml, salt 20 g, pepper 5 g and 2. MEAT POULTRY ROLES WITH VEGETABLES – Flour 500 g, water 300 ml, salt 3g, eggs 300 g which formed pancakes added minced meat poultry 200 g, peppers 50 g, onion 20 g, brocoly 50 g, cheese 100 g, mushrooms 100 g.

Analyzing the elements of recipes into the external factors such as: the pH indicator, the oxygen, the light, the heat and the cooling conditions we are established that the nutritive substances especially, vitamins A, D, E, B have an important decreasing generated by their instability (*table 1*).

Table1

The stability of vitamins (S=stability, IN = instability)

Nutritive substances	Neutral Med. pH= 7	Acid Med. pH<7	Alkaline Med. pH>7	Oxygen	Light	Heat	Loses in the procesing, max. %
Vitamin A	S	IN	S	IN	IN	IN	40
Vitamin C	IN	S	IN	IN	IN	IN	100
Vitamin D	S	IN	IN	IN	IN	IN	40
Niacin(PP)	S	S	S	S	S	S	75
VitaminB6	S	S	S	S	IN	IN	40
VitaminB2	S	IN	S	S	IN	IN	75
Tiamin(B1)	IN	S	IN	IN	S	IN	80
VitaminB12	S	S	S	IN	IN	S	10
Vitamin E	S	S	S	IN	IN	IN	55

REZULTS AND DISCUSSIONS

In this respect we have done some determinations and calculations for different kinds of meat (*figure 1*), as well as other materials which can be included in the manufacturing recipes as additional elements with a role of fortifying/enriching the food products.

As it can be seen the greatest content in proteins is found in the chicken meat, having also a great content of the B1, B2, PP, A and E vitamins. So, we have selected/chosen as additional materials among vegetables and fruit those which can complete the content in vitamin, mineral salts and food fibres of the chicken products (*figure 1*).

So, it is opportunity to study the recipes which contain additional materials, fruits or vegetables with an important nutritive value.

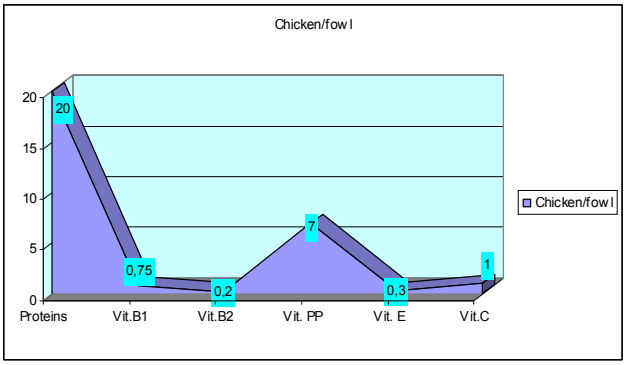

Figure 1 **The dynamic of nutritive substances of the chicken products**

So, we have chosen the additional materials among the vegetables or fruits which can complete the content in vitamins of the chicken products (*figure* 2).

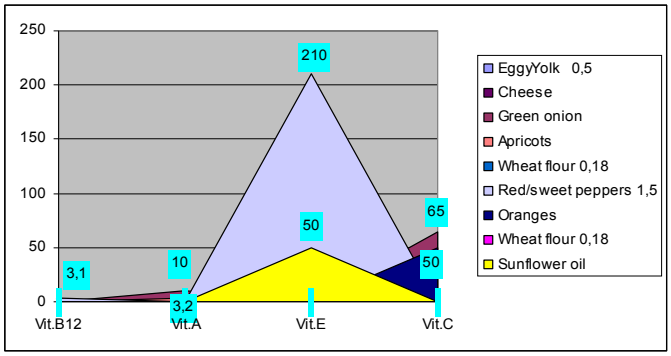

Figure 2 **The biochemical characteristics of the additional materials which could be used to increase the nutritive value of the chicken semiproducts (mg/100g product)**

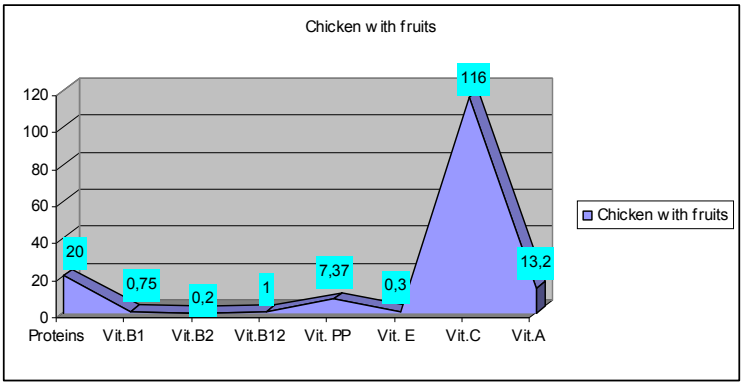

Figure 3 **The dynamic of the vitamins into the chicken with fruits product**

We should say that in the first recipe – meat poultry with fruits it was obtained an increasing of 1% for the vitamin B12, 0,37% for the vitamin PP, 13,2% for the vitamin A and 99% for the vitamin E.

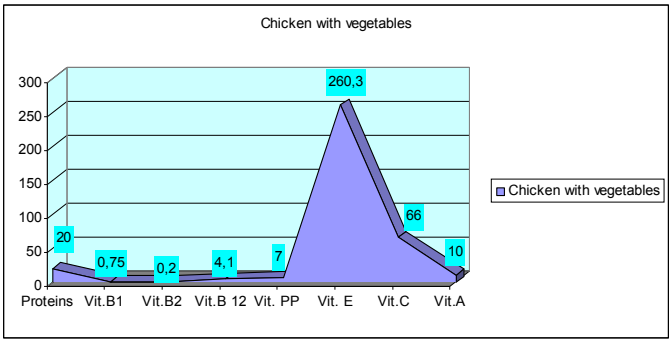

Figure 4 **The dynamic of the vitamins into the chicken with vegetables product**

We should say that in the second recipe – meat poultry with vegetables it was obtained an increasing of 4,1% for the vitamin B12, 10% for the vitamin A, 98,5% for the vitamin C and 99,9% for the vitamin E.

So, as a result of the experiments carried out, we realized that we could use to make new chicken recipes the following raw and additional materials:

- chicken meat because it has the greatest amount of the B complex;
- leguminous plants and vegetables, such as: vegetable marrows, green onion and red peppers which besides small amounts of B vitamin can improve significantly the contribution in PP, E, C vitamins;
- fruit: apricots, oranges which have a great amount of the vitamin C;
- cheese complete the amount of vitamins of the B complex;
- the sunflower oil has a contribution of 50mg/100g to the vitamin E.

CONCLUSIONS

The present research aimed at:

Elaborating new recipes of chicken products enriched with vitamins;

Identifying the raw and additional materials which can improve the nutritive value of the new chicken meat recipes;

In the first recipe – meat poultry with fruits it was obtained an increasing of 1% for the vitamin B12, 0,37% for the vitamin PP, 13,2% for the vitamin A and 99% for the vitamin E.

The second recipe – meat poultry with vegetables it was obtained an increasing of 4,1% for the vitamin B12, 10% for the vitamin A, 98,5% for the vitamin C and 99,9% for the vitamin E.

BIBLIOGRAPHY

1. Ashworth, U.S., Krueger, G.J. 1951 - *Chemical factors affecting the baking quality of non-fat mily solids*. IV. Minimum heat treatment for maximum loaf volume. Cereal Chemistry, 28:145-152.
2. Banu, C., Butu, N., Sahleanu, V., Răsmeriţă, D., Stoicescu, A., Hopulele, T., 2000 - *Biotehnologii în industria alimentară*, Editura Tehnică, Bucureşti.
3. Chavey, A., Muñoz de Chaves, M., Roldan, A., Bermejo, S., Avila, A., Madrigal, H., 1993 - *La nutrición en México y la Transición Epidemiológica*. Instituto Nacional de la Nutrición, Méxoco, DF.
4. De Wit, J.N., Klarenbeek, G., 1984 - *Effects of various heat treatments on structure and solubility of whey proteins*. J. Dairy Sci. 67:2701-2710.
5. Dybing, S.T., Smith, D.E., 1991 - R*elation of chemistry and processing procedures to whey protein functionality*: A review. Cult. Dairy Prod. J. 26:4-12.
6. Eskin, I., 1977 - *Biochimystry of food, Academic press,* New York 1977.
7. Farr, D., 1990 - *High pressure technology in food industry*. Trends Food Sci. Technol. 1:14-16.
8. Mincu, I., Segal, B., Popa, E., Segal, R., 1989 - *Orientări actuale în nutriţie*, Editura medicală, Bucureşti.
9. Nagy, K., 1999 - *The role of Food Fortification in combating Micronutrient Deficiences, F. Hoffmann* – La Roche Basle – Switzerland.
10. Neamţu, G.,1997 - *Biochimie alimentară*, Editura Ceres, Bucureşti.
11. Niac, C., 2004 – *Alimentaţie, nutriţie, alimente*, Editura EMIA, Deva.
12. Roger, C., 2000 - *La qualité et la securité sanitaire des produits alimentaires : un des enjeux din Milleunium Round de l'OMC*, www. inra. Fr.

13. Rogoz, Maria-Silvia, 2005 – *Igiena şi securitatea produselor alimentare în contextul integrării României în Uniunea Europeană*, Direcţia publicaţii ASRO.
14. Rogoz, Maria-Silvia, 2005 - *Igiena şi securitatea produselor alimentare în contextul integrării României în Uniunea Europeană*, Direcţia publicaţii ASRO.
15. Segal, B., Balint, C. 1982 - *Procedee de îmbunătăţire a calităţii şi stabilităţii produselor alimentare*, Editura Tehnică, Bucureşti.
16. Segal, B., ş.a., 1987 - *Metode moderne privind îmbogăţirea valorii nutritive a produselor alimentare,* Editura Ceres, Bucureşti.
17. Segal, R., 2002 - *Principiile nutriţiei*, Editura Academica, Galaţi, pg. 49-182.
18. Segal, R., Segal, B., Gheorghe, V., Vitalie, T., 1983 - *Valoarea nutritivă a produselor agroalimentare*, Editura Ceres, Bucureşti.
19. *** - *Solutions for meat, poultry & vegetarian products*, Cosucra Groupe Warcoing, Belgium.