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INTRODUCTION

The present volume collects the contributions to the 7th Shelf Life International Meeting (SLIM 2015), which was held in Vimercate (MB), close to Milan, on October 21-23, 2015. The conference has been organized and hosted by the Italian Scientific Group of Food Packaging (GSICA), in collaboration with the Italian Institute of Plastics (IIP).

The International Meeting took place during the Expo Milano 2015, the Universal Exposition around the theme of "Feeding the Planet, Energy for Life". SLIM 2015 received the patronage of EXPO 2015, being recognized as a scientific event whose topics perfectly suited the aim of the Universal Exposition.

The Italian Scientific Group of Food Packaging (GSICA) has always paid particular attention to the career and work in the field of young scientists, to whom this special edition of SLIM was dedicated, being titled "SLIM for YOUNG 2015". Young scientists (below 40 years old) were strongly invited to contribute and to attend the meeting and they were involved as Chairmen/women of the sessions and main lecturers.

The aim of SLIM 2012 has been always to provide an international forum for presenting current development works and future directions of research and applications on the topic of shelf life of packaged food products. Since prediction, testing and extension of shelf life require multi-disciplinary approaches, scientists and technologists from different areas were invited to attend the meeting contributing to the in-depth scientific discussion in an open and free atmosphere, following the SLIM tradition.

The Conference Proceedings, published once again with the support of Chiriotti Publisher as a special issue of the Italian Journal of Food Science, contain research reports presented as oral and poster papers during SLIM2015.

25 oral presentations and 51 posters were equally distributed among the 4 sessions: **New nano Materials, New Technologies, New Shelf Life Testing and New Shelf Life modelling**. Eight plenary presentations were provided by the young scientists invited as session's chairpersons.

The conference structure, the diversity of the attendees and the selected contributions from both industry and academia, contributed significantly to identifying the problems and promoting scientific discussions and further collaborations among researchers and stakeholders concerned with shelf life.

As it was officially announced within the final remarks of the conference, the eighth edition of SLIM will be held in Thailand, very likely in October 2017: the "Food Science and Technology" department of "Kasetsart University of Bangkok", in collaboration with the "Packaging and Materials Technology" department confirmed its commitment to organize the next edition. The local organizing committee (led by prof. Sasitorn Tongchitpakdee) is already working at the event, which promises to be one of the not-to-be-missed forthcoming scientific events. Further useful information will be disclosed soon. Looking forward to meeting at SLIM17!

G. Buonocore, F. Licciardello and L. Piergiovanni

SESSION IV

“Long Life, High Sustainability
through Shelf Life Modelling”

CAN SHELF LIFE BE CONSIDERED AS A MEAN TO PROMOTE VEGETABLE PRODUCTS OF SUSTAINABLE LOCAL VARIETIES?

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ABSTRACT

In connection with the increasing interest for the consumption of food products of the local tradition, an investigation on the behavior of the consumers were conduct out for agricultural products also used as first subject for the preparation of ready dishes. Lately, also for the prepared alimentary products, processes of substitution it is assisted with products of the local tradition. The consumer, in fact, also for the ready foods it declares priority for the products food of the native saperis. In this context, particular the role of the grain legumes. The analysis proposed in this paper purely concerns the propensity to the consumption of legumes typical of an agricultural territory of Sicily.

Keywords: consumer behavior, local varieties, shelf life, food security, food safety

1. INTRODUCTION

The interest of the market to improve the shelf life (ALLEGRA, 2012) of the foods is strongly in increase, above all, to the agricultural products used in many food preparations of the popular tradition. In this context, the dried grain legumes have always been widely used for the consumption of prepared foods. However, constitutes a constraint, the period of retention, if the legumes are not industrially processed. In relation to the new market opportunities, interested parties are busy in judgments on whether to make use of technological tools that enhance the preservation of local tradition legumes. An important support to the evaluations can result from the knowledge of the demand motivation. Identify consumer trends means having information about buying behavior, about tastes and habits depending to age and lifestyle, about times and conditions of use of products. The survey on consumer motivations then gives concrete indications to the production and at the same time the right suggestions for the commercialization of the product concerned. In this article, we present the results of a survey on a sample of consumers of legumes of local biodiversity particularly, of a zone of Sicily with agricultural aptitude. Legumes are considered a vital source of food of the local population, but have not expressed a structural change. In particular, the investigation concerns the motivation at the origin of consumer behavior for dried grain legumes packed. Specifically, the analysis relates to the comparison between faba bean mayor, black lentil and chickpeas of the territory of Leonforte (Enna) and legumes with minimal characterization in terms of specificity. The packaging has been realized by the farmers for the variety of local biodiversity; instead, through wholesalers manipulators for legumes not characterized. In order to delineate the differences in behavior in the decision-making process of the consumer between legumes traditional and legumes of the retail chains. The results also provide interesting insights for evaluating the function of production of local varieties of legumes in relation to the promotion of environmental sustainability and income of stakeholders.

2. MATERIALS AND METHODS

The direct survey conducted on local varieties of legumes inland hills of Sicily is based on data collected at events aggregative public (festivals, fairs), through a questionnaire prepared ad hoc (ALLEGRA, 2014). This administered to 225 individuals of all ages, different sex, social class varies, of which solo 197 fit for the survey; the inquiry it was conduct in the period 2013-2015. The interviews were conducted both in the area of origin of the cultivation of legumes and other places of consumption of Sicily. As for the processing of collected, were consider only the age of the individuals, because other social personal characters do not affect the attitude of consumer the food. Each respondent, taken individually, has performed an assessment of the following attributes of legumes under investigation: perceived quality, typicality, ease of use, availability and convenience. This in order to able to identify the best alternative that maximizes the total utility in accordance with these attributes. The data collected were process in accordance with a methodology called "formal strategies of integration" which consists of the additive or linear rule "according to which the individual expresses a weight and an evaluation for each outstanding attribute of each alternative." The value assigned to each attribute was multiply by the corresponding relative weight; results were sum to obtain an overall assessment of the alternative. Scores made to allow an alternative to implement the choice; that is, the highest value obtained.

For this purpose, we develop the additive rule formula indicated below:

$$VA = \sum_{i=1}^n WiV(X_{Ai})$$

In which: - W is the weight of the i -th in terms of the importance for the decision maker; - $V(X)$ the evaluation of the attribute i -th and n are the attributes considered (Dalli, 2000). It should be observe that, the weight (W) is distinctive for each attribute, which does not depend on the alternative considered, however the assessment ($V[x]$) is attribute to the opinion expressed by the attribute of a specific alternative. Regarding the quantification, all "importance" has been assigned value between 0 and 1, the evaluation of the legume from 1 to 5. The data were process by classes of the age of the respondents, identifying a population with age: below 25 years old, between 25 and 45 years old, and finally over 45 years old.

3. RESULTS AND DISCUSSIONS

Demand is very active for grain legumes of consumers on any age group, with the expression of interest for all the concerned species. With reference to the attributes (Table 1), there is a certain uniformity as regards perceived quality, typicality and value for money, while recording differences for ease of use and availability. For these attributes, the ratings decrease going from younger adults because of poor knowledge of the peculiar characteristics of the legumes in question and in the kitchen preparation.

Table 1 - Grain legumes of the loal tradition and of the not specific origin, distribution to attribute type and age of consumers (*)

Attributes	Importange	Faba bean mayor			Black Lentil			Chickpeas			Legumes does not specified		
		Age of consumers			Age of consumers			Age of consumers			Age of consumers		
		<25	25-45	>45	<25	25-45	>45	<25	25-45	>45	<25	25-45	>45
Perceived quality	0,3	3	3	3	4	4	4	2	2	2	3	3	3
Typicality	0,3	4	4	4	4	4	4	1	1	1	3	3	3
Ease of Use	0,2	1	2	2	4	5	5	3	4	4	2	3	3
Availability	0,1	2	3	3	3	3	3	5	5	5	2	2	2
Value for Money	0,1	3	3	3	2	2	2	5	5	5	3	3	3

(*) Directly acquired data

Table 2 - Overall Assessment of the grain legumes by age consumers (*)

Attributes	Faba bean mayor			Black Lentil			Chickpeas			Legumes does not specified		
	Age of consumers			Age of consumers			Age of consumers			Age of consumers		
	<25	25-45	>45	<25	25-45	>45	<25	25-45	>45	<25	25-45	>45
Perceived quality	0,9	1,2	1,5	1,2	1,2	1,5	0,9	0,9	0,9	0,6	0,6	0,9
Typicality	1,2	1,2	1,5	1,2	1,2	1,5	0,9	0,9	0,9	0,3	0,3	0,3
Ease of Use	0,2	0,4	0,8	0,8	1,0	0,8	0,4	0,4	0,6	0,6	0,8	0,8
Availability	0,2	0,2	0,3	0,3	0,3	0,3	0,2	0,1	0,2	0,5	0,4	0,5
Value for Money	0,2	0,3	0,3	0,1	0,2	0,6	0,3	0,2	0,3	0,5	0,5	0,5
Votes obtained	2,7	3,3	4,4	3,6	3,9	4,7	2,7	2,5	2,9	2,5	2,6	3,0

(*) Our elaborations on directly acquired data

Table 2 on the overall evaluation by age, shows that legumes local tradition have higher values than to grain legumes generic. Of course, the reasons for each consumer behavior may be very different, especially in relation to the specific objective that every consumer wants to achieve as a satisfaction of a need of a food particular. From the interviews, it became clear that the decision-making process be the result of direct experience,

observation of the moment, or word of mouth. Specifically, the interviews showed that the motivation at the origin of consumer behavior varies by social group examined. In fact, in the age group over 45 years, consumer behavior is due to the memory that is the main element that influences the decision, so the choice. As for the younger age groups, the impulse is the most important factor for the choice of legumes, as the decision to purchase is determined by social and environmental conditions and the mood of the moment. In all cases, whatever the social group by age considered or the decision established, the choice of the consumer is linked to the traditional legumes to which they are increasingly recognizing the organoleptic and nutritional properties, as well as the guarantee of the maintenance of food safety standards.

Table 3 shows the results obtained from interviews with consumers be they traditional and modernists, about the reasons for purchase and the reasons for non-purchase of legumes if available at major retail outlets.

Table 3 - Orientation buying packaged legumes in grocery store (*)

Main places of food retail	Consumers of grain legumes of the local traditional						Respondents in total	
	Traditionalists			Modernists			N.	%
	<25 old	25-45 old	>45 old	<25 old	25-45 old	>45 old		
Discount		4	6		3		13	6,6
Supermarkets	6	5	9	2	14	2	38	19,3
Groceries								
- <i>specialist</i>	4	10	16	6	11	3	50	25,4
- <i>traditional</i>	5	18	22	2	8	5	60	30,5
Farmer's market		2	18	1	12	3	36	18,2
Total	15	39	71	11	48	13	197	100,0
	7,6	19,8	36,0	5,6	24,4	6,6	100,0	

(*) Directly acquired data

In this way, they highlight market segments with spaces to be covered. The survey also made it possible to achieve interesting results about the possibility of development of production of traditional legumes in the ecosystem of origin (food security).

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