



Received on 04 June, 2012; received in revised form 21 September, 2012; accepted 27 September, 2012

## IMPLEMENTATION OF A NEW COURSE FOR THE PHARMACY PROGRAM AT THE CATHOLIC UNIVERSITY OF CUYO "HERBAL MEDICINES, NUTRACEUTICALS AND DIETARY SUPPLEMENTS"

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### Keywords:

Dietary supplements,  
Functional foods,  
Nutraceuticals,  
Nutritional therapy,  
Pharmaceutical legislation

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### ABSTRACT

The course on "Herbal Medicines, Nutraceuticals and Dietary Supplements" has been implemented among the new courses within the 2007 curriculum of the Pharmacy Program, School of Food, Biochemical and Pharmaceutical Sciences at the Catholic University of Cuyo, located in San Juan Province, Argentina. The main objective of the course is to provide students with the necessary tools to acquire knowledge on new concepts of nutritional therapies, functional foods and dietary supplements. All of which are meant to revert or prevent unfavorable health conditions. This paper describes the methodology used in the development of the course, the minimum contents exposed, experience and teacher evaluation during the years 2009 and 2010.

**INTRODUCTION:** The Pharmacy Program of the School of Food, Biochemical and Pharmaceutical Sciences at the Catholic University of Cuyo, conveys two existing curricula: the curriculum 2001 with reported modifications during the years 2002 and 2004 (Mins Res. No. 1186 and Mod. Rep DNGU No. 1392/02 and No. 347/04 respectively) and the curriculum currently in force since 2007.

In the latter, which has been accredited in 2007 by CONEAU (in English, National Commission for University Evaluation and Accreditation in Argentina), several elective courses have been incorporated at the senior cycle. The academic institution intends to offer a deep study on certain topics and address emerging issues regarding the areas of science and technology.

Among these new courses, "Herbal Medicines, Nutraceuticals and Dietary Supplements" has been implemented for the senior year as one of the elective courses.

Over the last two decades, nutritional knowledge on health has changed global trends of food, creating a heightened interest among health professionals and the general population in these nutraceutical foods, that is, foods that besides providing nutritional value provide physiological benefits<sup>1,2</sup>.



These foods are not only intended for use in healthy people or for poor diets, as defined by current standards under the category of dietary supplements, but aim at the prevention or treatment of certain diseases <sup>1-4</sup>. It is important to emphasize that a pharmacist's responsibilities are not to be linked only to drugs, but in a broader concept, related to the health care profession.

Because of this, the FNSD course (in English, Herbal Medicines, Nutraceuticals and Dietary Supplements) is intended to provide the necessary tools for the acquisition of new concepts involved in nutritional therapies, functional foods, nutraceuticals and dietary supplements. Course requirements include: definition and preparation and control methods of functional foods, nutraceuticals, probiotic, prebiotic and herbal medicine, dietary supplement and nutritional therapy, taking into account the existing legal framework, among others <sup>5</sup>.

**MATERIALS AND METHODS:** When taking the FNSD course, students should be able to differentiate the nutritional therapies for each disease.

In order to achieve the predetermined objectives, two main course activities are proposed during the semester: theoretical classes and hands-on activities. The theoretical classes are carried out in a weekly three-hour period, during which the core contents of the new concepts are developed.

The practical activities, seek to focus on learning experiences from the constructivist paradigm based upon autonomous and group research principles. The practical classes are carried out over a three-hour period on a two-week basis. These classes have the intention to promote student participation in information research and in finding alternative solutions for the environment, from the standpoint of a professional. The pedagogical techniques deployed for both the theoretical and practical classes are as follows:

- Group Discussion
- Group interaction dynamics (presentation and encouraging techniques, analysis techniques)
- Group work

- Plenary presentations

**RESULTS AND DISCUSSION:** These techniques have been used due to the growing interest in an educational process based on interaction and reflection, which involves a change in the approach and the work of the professional pharmacist. Each practical activity is carried out orally and/or in written form, individually or in groups, taking into account personal participation in class, resolution of tests and elaboration of reports. In order to evaluate teacher performance, different methods have been applied since the implementation of the FNSD course. Since the year 2009 an anonymous survey has been conducted at the end of the course. An example of this survey is shown below (**Figure 1**).

Herbal Medicines, Nutraceuticals and Dietary Supplements

COMISSION:

DATE:

1. Do you think that the theoretical classes meet the objectives?  
 Yes                      No                      Partially
2. Do you think the practical classes meet objectives?  
 Yes                      No                      Partially
3. Do you consider useful all the information that has been issued on the subject for the professional practice?  
 Much                      Sufficient                      Little                      Nothing
4. On a scale of 1 to 5 (1= excelent; 2= very good ; 3= good; 4= regular; 5= poor) qualify:  
 a) The presentation.....                      b) The content.....
5. Do you think that there is absence of a regulatory framework which specifies the responsibility and the role of pharmacists in this theme?  
 Yes                      No                      Partially

Comments:.....  
 .....  
 .....

**FIGURE 1: EXAMPLE OF SURVEY USED TO EVALUATE THE ACTIVITIES OF THE FNSD COURSE**

The minimum contents of the course are presented below. Topics to be dealt with in depth during the practical classes are marked in **bold**.

- Definition and preparation and control methods of functional foods, nutraceuticals, probiotics, prebiotics and herbal medicines, dietary supplements and nutritional therapies.
- Specific legal framework.
- Special nutrition for sports, pediatrics, oncology, dialysis, the elderly, metabolic diseases, orphans and the neglected, HIV, among others and the clinical and scientific rationale for its use.
- Role of the pharmacist and health care team.
- Advertising.
- Biotechnology and its application in therapies.
- Essential aminoacids, vitamins and lipids.

Surveys related teacher performance between 2009-2010, yielded the following results:

TABLE 1. SURVEY RESULTS RELATING TO TEACHING PERFORMANCE DURING THE YEARS 2009 – 2010

QUESTION No.									
1		2		3		4		5	
Yes	Partially	Yes	Partially	Much	Sufficient	Presentation (1 y 2)	Content (1 y 2)	Yes	Partially
63.6%	31.8%	50.0%	13.6%	40.9%	50.0%	50.0%	63.6%	68.2%	31.8%

**CONCLUSION:** The concepts of Nutritional Therapy, Functional Foods, Health and Patient Care are included within the contents of the course "Herbal Medicines, Nutraceuticals and Dietary Supplements". These concepts are closely related to the pharmacist's profile as a health care professional and have not been previously covered in depth in the Pharmacy Program.

Students' support in terms of content, methodology, achievement of pedagogical objectives and utility of the topics for professional practice is notorious taking into account the teacher performance evaluation.

The implementation of the course has enabled students to outline some professional guidance in addition to personally manage their access to knowledge.

From the development of this course, the need to continue studying in depth other topics related to the curricula of the professional pharmacist also emerges.

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#### How to cite this article:

Ravetti S, Aciar RMA, and Hergert LY: Implementation of a New Course for the Pharmacy Program at the Catholic University of Cuyo "Herbal Medicines, Nutraceuticals and Dietary Supplements". *Int J Pharm Sci Res.* 3(10); 3704-3706.