

ORIGINAL ARTICLE

The Prevalence, Level of Knowledge and Methods of Providing Nutritional Supplements among Females Participating in Private Sports Clubs in the City of Ardabil, Iran

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ABSTRACT

Background: The use of nutritional supplements among athletes is sharply increasing. There are many investigations demonstrating side effects of dietary supplement use such as cardiovascular, hematological, metabolic, and neurological problems. The aim of this study was to assess prevalence, level of knowledge and methods of providing nutritional supplements among females attending in private sport clubs in the city of Ardabil, Iran.

Methods: Seventy-three fitness private clubs in four municipalities were considered as the population of the study. According to Morgan's table, 163 people were chosen as a sample of 18 clubs in a multi-stage, randomized fashion. Structured interview was conducted by physical education students as interviewer using researcher-made questionnaires. The questionnaire included 19 questions and 4 sections.

Results: Totally, 31.3% of participants used nutritional supplements. Vitamins (31.4%) and fat burners (27.5%) were the most commonly used supplements. More than half of the participants started supplementation with their instructor's suggestion (55.6%). Most participants who used nutritional supplements, believed that the use of supplements did not pose any risk (62.7%), while the majority of those who did not consume; believed it would be risky (73.2%). Furthermore, 50.9% of participants who did not take nutritional supplements believed supplementation would be harmful to health.

Conclusion: The prevalence of nutritional supplements was high in non-professional females who did exercise for recreation or health promotion in private sport clubs. Since that many of these supplements were recommended by instructors and club owners, the main goal of selling these supplements seems to increase the income rather than their positive effects.

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Introduction

Nutritional supplement, sometimes referred to as sports supplements, is a substance used by athletes to compensate nutritional deficiencies, increase the level of performance, and increase their free fat mass (1, 2). Types of dietary supplements include vitamins, minerals, herbs, amino acids, enzymes, metabolites, steroids, fat burners and stimulants (3). Therefore, sports supplements contain substances that are present in natural foods and are not necessarily doping (4). In recent years, with the advancement of various sports sciences, there has been a significant increase in the health supplements industry, which has led to an increase in the desire to use these supplements to improve health and enhance the level of athletic performance (5).

According to recent studies, the use of nutritional supplements among professional and non-professional athletes is increasing sharply (6, 7). For example, Morrison et al. claimed that almost 84% of people who do exercise in gyms use sports supplements (8). According to research, protein is the most complete supplement used in sports clubs (9). Many supplements used by athletes have side effects and may endanger the athlete's health (10, 11) Although the use of these supplements is likely to result in temporary satisfaction with the athlete, it may jeopardize the health of the individual in the medium and long term. The use of sports supplements includes six critical organs of the human body, including the heart, kidney, liver, genital, skin and muscle (12). There are various causes for the harmfulness of dietary supplements, some of which include the presence of impurities in supplements, counterfeit supplements, and lack of proper use (13-15).

Due to the special style women live in Islamic countries, after adulthood, their recreation is under a special framework, and apparently this issue has reduced physical activity in most Iranian females. This change in lifestyle with sexual alteration after puberty (increased estrogen secretion) is a reason for weight gain, and especially the weight of fats in females. Preventing obesity-related illnesses and improving the body type using weight loss and strength training is one of the most important tendencies of overweight Iranian females. This tendency in some cases, due to misleading advertising of drug dealers and weight loss supplements, causes these substances to be consumed and causes irreparable complications (16). Regarding the high prevalence of nutritional supplements in sports clubs and the risk of consuming such supplements, especially in females, the purpose of this study was to determine the prevalence, level of knowledge, and methods of providing nutrition supplements in

females participating in private sports clubs in the city of Ardabil, the center of Ardabil province, in the north west of Iran.

Materials and Methods

The present research is a descriptive study conducted in the city of Ardabil, the center of Ardabil province, Iran from June to August 2017. A total of 73 active private sports clubs in four administrative regions of the city of Adabil were considered as the statistical population of the research. The number of female clients in the clubs was approximately 800 from 10 to 12h in the morning. According to the Krejcie and Morgan table, 163 individuals were selected as a sample of 18 clubs randomly in a multistage cluster sampling method (17).

The sampling was based on the number of clubs in each area and the number of participants to each club. The participants were female volunteers aged 18 to 50 years who attended a club for at least three consecutive weeks and three sessions a week. All participants filled out the consent form and learned verbally and in writing about the goals and methodology of the research. Required data was obtained using structured interview conducted by physical education students via researcher-made questionnaires.

At first, 9 female students of the Azad University of Ardabil Branch learned how to conduct the interview in a few sessions. Then, they were sent to the selected clubs to attend randomly from 10 to 12h in the morning and randomly from subjects volunteered to participate in the research, interviewed. The questionnaire consisted of 19 questions and 4 sections. In the first part, there were 7 questions about the background characteristics of subjects including age, gender, educational level, job, marital status, weight and height.

In the second part, 6 questions about the physical activity including the number of days of exercise per week, the type of sports activity, doing exercise independently or under the supervision of an instructor; in the case of having an instructor, field of education, and instructor's degree. The third part contained 4 questions related to nutritional supplements including the use or non-use of supplements, the type of supplementation, the recommender of supplementation, and the source of getting supplements. The fourth part was related to two perceptual questions, including the cause of use or the reason for not taking the supplement and the effect of supplemental supplementation on health. Statistical analysis was conducted by SPSS software (version 22, Chicago, IL, USA). Descriptive information was

reported as a percentage or number. A p value less than 0.05 was considered statistically significant.

Results

Table 1 shows basic demographic characteristics of subjects including age, height, and weight and Table 2 summarizes other demographic characteristics including educational level, job status, and marital status. According to Table 2, the majority of participants in the study had a diploma (28.8%), married (57.1%) and unemployed (76.1%). Table 3 demonstrates the days of exercise per week. All participants attended the club at least three days a week (Table 3), although most

participants were exercising six days a week (52.8%). Table 4 presents some information about the level and the field of the instructors of the sports clubs. Of the participants in the study, 135 persons (82.8%) were under the supervision of the coach. The level of education of most instructors was MSc (73.3%), and almost half of instructors, educated in physical education and sports sciences (50.4%) (Table 4).

In Figure 1, the sort of exercise has been reported. Nearly half of the participants referred to the club for bodybuilding (46.0%). Approximately a quarter of them (23.3%) aimed at improving and keeping physical fitness, one-fifth of the participants

Table 1: Demographic characteristics of participants.

Variable	N	Mean	Std. Error	Std. Deviation
Weight	163	69.01	0.964	12.309
Height	163	163.89	0.473	6.038
Age	163	28.86	0.594	7.590

Table 2: Educational level, marital, and job status of participants.

Variable		Frequency	Percent
Education Level	Under Diploma	15	9.2
	Diploma	47	28.8
	BSc or BA	33	20.2
	MSc or MA	51	31.3
	PhD	17	10.4
	Total	163	100
Marital Status	Single	70	42.9
	Married	93	57.1
	Total	163	100
Job Status	Unemployed	124	76.1
	Employed	39	23.9
	Total	163	100

Table 3: Weekly exercise of participants.

Days of exercise	Frequency	Percent
3	62	38.0
4	5	3.1
5	10	6.1
6	86	52.8
7	0	0.0
Total	163	100.0

Table 4: Education level and field of instructors.

Variable		Frequency	Percent	
I have instructor (N=135)	Education level of instructor	ASc	3	2.2
		BSc or BA	99	73.3
		MSc or MA	19	14.1
		PhD	14	10.4
		Total	135	100
	Education field of instructor	Physical education	68	50.4
		No physical education	67	49.6
		Total	135	100

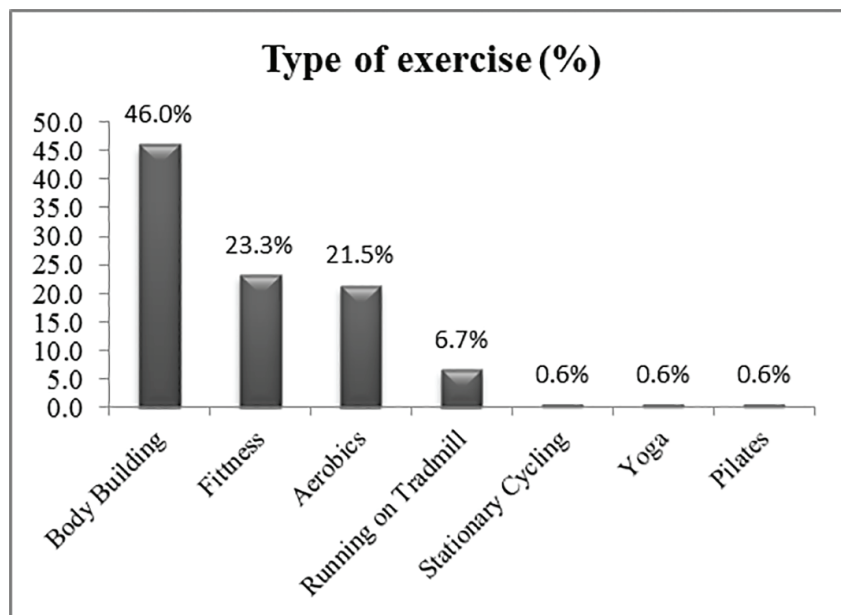


Figure 1: Type of exercise (%).

preferred aerobic trainings (21.5%), and the rest were activities such as running on treadmill (6.7%), stationary cycling (0.3%), yoga (0.3%) and Pilates (0.3%) (Figure 1). Figure 2 shows the type of nutritional supplements. According to Figure 2, the most commonly used supplements were fat burners (27.5%), proteins and amino acids (17.6%), creatine (11.8%) and minerals (3.9%), respectively. In Figure 3, the recommender of supplementation has been reported. Finally, figure 4 shows that almost half of the participants (49.0%) got their supplements from the legal source that pharmacies, about a quarter of the participants provided the necessary supplement from the club owners or instructors (25.5%) and 29.1% of consumers bought supplements from the supermarkets.

Discussion

The purpose of this study was to investigate the prevalence, level of knowledge, methods of providing nutrition supplements in females participating in private sports clubs in the city of Ardabil, Iran. According to many studies, people who did exercise to promote their health did not need extra vitamin supplementation in their diets (18). Unfortunately, most participants, because of lack of knowledge and due to the wrong advice of coaches, used such supplements, which, in addition to the possible adverse effects, had no other benefit for them. According to data, of the total participants in the current study, nearly one-third of them (31.3%) used nutritional supplements and almost one-third of participants consumed vitamins (31.4%).

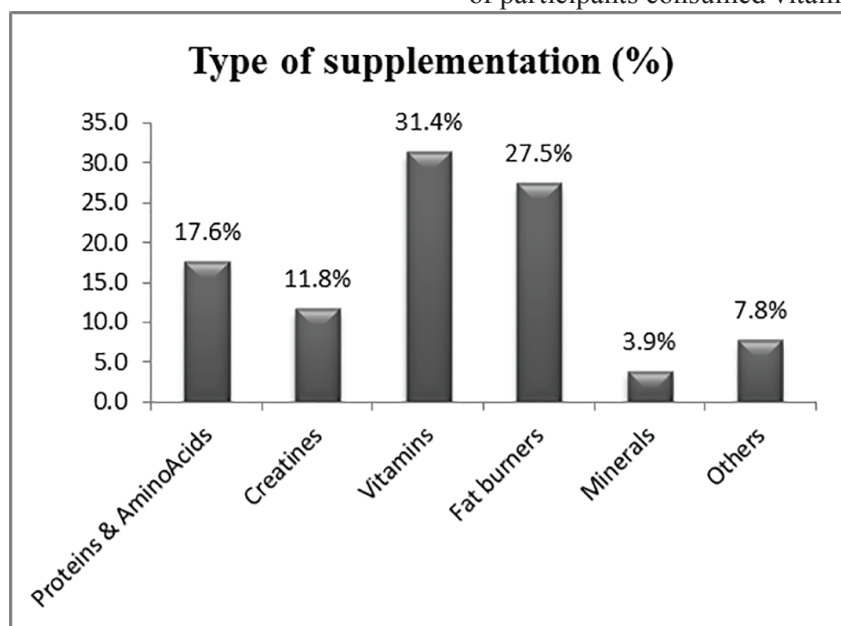


Figure 2: Type of supplementation (%).

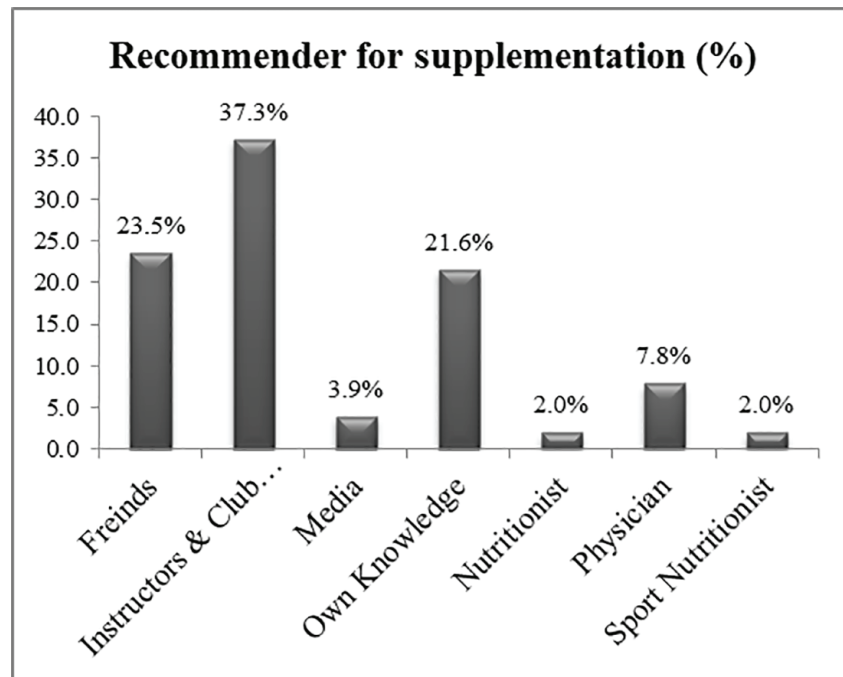


Figure 3: Recommender of supplementation (%).

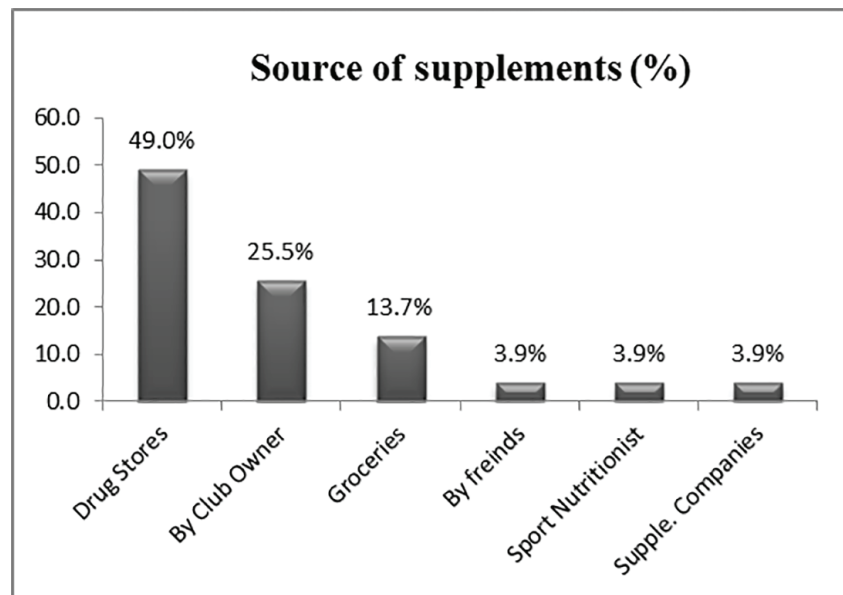


Figure 4: Source of supplementation (%).

Fat burners were secondary most common supplement that reflects a consumers' tendency to lose weight. According to many researches, most fat burner supplements have not only a negative effect on weight loss, but also have many side effects that can endanger the athlete's health (19, 20). A plenty of researches demonstrate the best way to lose weight is still diet control associate with aerobic exercise (21-23). Totally, 29.4% of the participants consumed proteins, amino acids and creatine, which probably belonged to half of the participants who came to the club for bodybuilding (Figure 2). Interestingly, the use of such supplements also has side effects and their use is not recommended for professional athletes (24).

Studies have shown that people who do exercise to improve their health do not need to take such supplements (7, 25) and the educational level of majority of instructors, the use of such supplements by participants did not make any sense. There were various sources of recommenders of nutritional supplements in this study. According to the Figure 3, more than one third of the participants used supplementation recommended by their instructors (37.3%).

Approximately one-fourth of participants complied with the recommendations of their friends (24.5%), while the rest were based on their own knowledge (21.6%), physician recommendation (7.8%), media advertising (3.0%), dieticians (2.0%) or

sports nutritionists' recommendation (2.0%) to take the supplements. The high volume of suggestions by instructors shows that they are too incline to prescribe such supplements, which can be due to increased customer attraction and higher income, apart from the belief in the positive impact of these supplements.

This hypothesis is further confirmed by reviewing the Figure 4 showing that almost half of the participants (49.0%) got their supplements from the legal source those pharmacies. Unfortunately, about a quarter of the participants have provided the necessary supplement from the club owners or instructors (25.5%), which is illegal under the orders of the Ministry of Health. Interestingly, 29.1% of consumers bought supplements from the supermarkets, which is completely illegal. As we know, many supplements in the market are illegally produced and do not have the required standards, and they not only have no positive effect, but also they can be dangerous for athletes due to the presence of impurities (25-27).

Participants' beliefs about the dangers of consuming supplements were also quite different with regard to whether they consumed or did not consume supplements. Moreover, most supplement users believed that the use of these supplements did not pose any risk (62.7%), while the majority of them who did not consume the supplements believed to be risky (73.2%). Interestingly, 15.7% of supplement users were taking nutritional supplements, despite believing that such supplements were dangerous.

The reason for not taking supplements by participants was also different. According to data, 50.9% of those who did not take sport supplements believed that supplementation would be harmful to health. On the other hand, 9.8% did not consume supplements due to lack of funds. 8.0% believed that nutritional supplementation has no benefit, 7.1% believed that only professional athletes should have consumed such supplements, and 24.1% of the rest had different beliefs.

Conclusion

The prevalence of nutritional supplements is high in non-professional females who do exercise for recreation or health promotion in private sport clubs. According to the data, many of these supplements are suggested by instructors and club owners. The main goal of selling these supplements seems to be to increase the income rather than their positive effects. The results of this study also showed that many participants were not well aware of the complications of such supplements. Therefore, doing exercise associated with the use

of such supplements may be hazardous.

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Conflict of Interest

None declared.

References

- 1 Alhekail O, Almeshari A, Alabdulkarim B, et al. Prevalence and patterns of the use of protein supplements among gym users in riyadh, Saudi Arabia. *Int J Pharm Res Allied Sci.* 2018;7:80-6.
- 2 Molinero O, Márquez S. Use of nutritional supplements in sports: risks, knowledge, and behavioural-related factors. *Nutr Hosp.* 2009;24:128-34. PMID:19593480.
- 3 Little JP, Phillips SM. Resistance exercise and nutrition to counteract muscle wasting. *Appl Physiol Nutr Metab.* 2009;34:817-28. DOI:1139/H09-093. PMID:19935843.
- 4 Ekramzadeh M, Taherinasab S. The Prevalence of Sport Dietary Supplements Consumption among Male Athlete Students in Shiraz University of Medical Sciences, Shiraz, Iran. *In J Nutr Sci.* 2017;2:218-23.
- 5 Sarlak M, Shojaei M, Kashi A. The prevalence of the use of ergogenic aids and awareness of their sideeffects among Iranian body builders. *Int J Sport Stud.* 2014;4:830-5.
- 6 Kantor ED, Rehm CD, Du M, et al. Trends in dietary supplement use among US adults from 1999-2012. *JAMA.* 2016;316:1464-74. DOI:1001/jama.2016.14403. PMID:27727382.
- 7 Valentine AA, Schumacher JR, Murphy J, et al. Dietary supplement use, perceptions, and associated lifestyle behaviors in undergraduate college students, student-athletes, and ROTC cadets. *J Am Coll Health.* 2018;66:87-97. DOI:1080/07448481.2017.1377205. PMID:28915096.
- 8 Morrison LJ, Gizis F, Shorter B. Prevalent use of dietary supplements among people who exercise at a commercial gym. *Int J Sport Nutr Exerc Metab.* 2004;14:481-92. DOI:1123/ijsnem.14.4.481.
- 9 Bianco A, Mammina C, Paoli A, et al. Protein supplementation in strength and conditioning adepts: knowledge, dietary behavior and practice in Palermo, Italy. *J Int Soc Sports Nutr.* 2011;8:25. DOI:1186/1550-2783-8-25. PMID:22206347.
- 10 Morris MS, Sakakeeny L, Jacques PF, et al. Vitamin B-6 Intake Is Inversely Related to, and the Requirement Is Affected by, Inflammation

- Status1. *J Nutr.* 2009;140:103-10. DOI:3945/jn.109.114397.
- 11 Bailey RL, Dodd KW, Gahche JJ, et al. Total folate and folic acid intake from foods and dietary supplements in the United States: 2003–2006. *Am J Clin Nutr.* 2009;91:231-7. PMID:19923379. DOI:3945/ajcn.2009.28427.
 - 12 Rezaei SMA. Study the Prevalence of Anabolic Steroids Consumption among Bodybuilding Athletes in Yasuj, Iran. *Int J NutrSci.* 2017;2:103-8.
 - 13 Denham BE. Athlete Information Sources About Dietary Supplements: A Review of Extant Research. *Int J Sport Nutr Exerc Metab.* 2017;27:325-34. DOI:1123/ijsnem.2017-0050. PMID:28388288.
 - 14 Mathews NM. Prohibited contaminants in dietary supplements. *Sports Health.* 2018;10:19-30. DOI:1177/1941738117727736. PMID:28850291.
 - 15 Fouillot JP. Doping and dietary supplements. *Bull Acad Natl Med.* 2004;188:933-42. PMID:15651423.
 - 16 Sarlak Z, Kashi A, Nazarali P. Satisfaction of body shape and body weight control behaviors among Tehran provinces students. Proceeding of the 4th National Congress on Physical Education and Sport Sciences; 2006. P.21-23.
 - 17 Krejcie RV, Morgan DW. Determining sample size for research activities. *Educ Psychol Meas.* 1970;30:607-10. DOI:1177/001316447003000308.
 - 18 Alsofyani MAA, Al-Essa MHA, Assiri MA, et al. Prevalence of people that using multivitamins supplementation & experiencing a side effect in Saudi Arabia. *Egypt J Hosp Med.* 2018;70:65-71.
 - 19 Gavrić A, Ribnikar M, Šmid L, et al. Fat burner–induced acute liver injury: Case series of four patients. *Nutrition.* 2018;47:110-14. DOI:1016/j.nut.2017.10.002. PMID:29310849.
 - 20 Abdelmageed RE, Xiao H. Symptomatic first-degree atrioventricular block in a young woman after taking a fat burner supplement. *Int J Health Sci.* 2017;11:79.
 - 21 Rey O, Vallier JM, Nicol C, et al. Effects of combined vigorous interval training program and diet on body composition, physical fitness, and physical self-perceptions among obese adolescent boys and girls. *Pediatr Exerc Sci.* 2017;29:73-83. DOI:1123/pes.2016-0105. PMID:27617981.
 - 22 Das EK, Lai PY, Robinson AT, et al. Regular aerobic, resistance, and cross-training exercise prevents reduced vascular function following a high sugar or high fat mixed meal in young healthy adults. *Front Physiol.* 2018;9:183. DOI:3389/fphys.2018.00183. PMID:29568273.
 - 23 Annesi JJ. Exercise Predicts Long-Term Weight Loss in Women With Class 1 and Class 2 Obesity Through Effects on Emotional Eating and its Correlates. *J Phys Act Health.* 2018;15:57-63. DOI:1123/jpah.2017-0170. PMID:28771085.
 - 24 Samal JRK, Samal IR. Protein Supplements: Pros and Cons. *J Diet Suppl.* 2018;15:365-71. DOI:1080/19390211.2017.1353567. PMID:28937838.
 - 25 Attlee A, Haider A, Hassan A, et al. Dietary supplement intake and associated factors among gym users in a university community. *J Diet Suppl.* 2018;15:88-97. DOI:1080/19390211.2017.1326430.
 - 26 Zhao J, Wang M, Avula B, et al. Detection and quantification of phenethylamines in sports dietary supplements by NMR approach. *J Pharm Biomed Anal.* 2018;151:347-55. DOI:1016/j.jpba.2018.01.025. PMID:29413984.
 - 27 Pascali JP, Fais P, Vaiano F, et al. Application of HRAM screening and LC-MS/MS confirmation of active pharmaceutical ingredient in “natural” herbal supplements. *Forensic Sci Int.* 2018. pii: S0379-0738(18)30109-9. DOI:1016/j.forsciint.2018.03.014. PMID:29580698.