

## ARTICLE

## Dispensing Practices, Attitudes and Knowledge of Pharmacists towards Herbal Products in Palestine

Waleed M. Sweileh<sup>1</sup>, Enass M. Abu Arrah<sup>2</sup>, Adham S. Abu Taha<sup>1</sup>, Ansam F. Sawalha<sup>1</sup>, Ola A Salah<sup>2</sup>, Raniah M. Jamous<sup>3</sup>, Deema Adawi<sup>2</sup>

<sup>1</sup>Division of Pharmacology and Toxicology, Department of Pharmacy, College of Medicine and Health Sciences, An-Najah National University, Nablus, Palestine.

<sup>2</sup>Division of Clinical Pharmacy, Department of Pharmacy, College of Medicine and Health Sciences, An-Najah National University, Nablus, Palestine.

<sup>3</sup>Palestinian Military Medical Services, Nablus, Palestine.

Corresponding author: Dr. Adham Abu Taha E-mail: adhamtaha@yahoo.com

Published: 01 May 2013

Ibnosina J Med BS 2013,5(3):123-130

Received: 30 October 2012

Accepted: 05 December 2012

This article is available from: <http://www.ijmbs.org>

This is an Open Access article distributed under the terms of the Creative Commons Attribution 3.0 License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### Abstract

**Background and Objectives:** With the global rise in the use of herbal products; pressure is increasing on pharmacists to have more knowledge about herbal medicine. We assessed pharmacists' dispensing practices, attitudes, and knowledge regarding herbal products. **Methods:** A cross sectional study was carried out among community pharmacists in north Palestine using a questionnaire. A convenience sample of 100 community pharmacists was included in the study. The mean age of participants was 33±11 years. **Results:** Dispensing of herbal products was common. The majority of participants (91%) believed that herbal products were beneficial and 61% believed these had fewer side effects than conventional medicines. Most participants thought they have good knowledge of herbal preparations. However, their actual knowledge in response to factual questionnaire was low. The lowest score was observed for herbal drug interactions domain. **Conclusions:** Although herbal products are commonly dispensed in Palestine,

community pharmacists have poor knowledge about these medicines. Continuing pharmacy education in general is needed for community pharmacists to qualify them to provide a better pharmaceutical care.

**Key words:** Community pharmacists, Herbal products, Practice, Palestine

### Introduction

Recently there has been a global rise in the use of complementary and alternative medicine, particularly herbal medicine as a health care option (1-4). Herbal medicines are defined as herbal preparations or finished herbal products that contain as their active ingredients parts of plants or other plant materials or combinations of plants (5). According to the World Health Organization (WHO), 70–95% of the populations in developing countries rely on traditional medicines for primary care, while 70-90% of the populations in industrialized countries have used traditional

medicines (5,6). This increase in the use of herbal remedies worldwide was accompanied by increasing reports of adverse drug reactions and herbal-drug interactions (7,8). Despite the fact that herbal remedies are not classified as drugs by the US Food and Drug Administration (FDA), the 1994 Dietary Supplement Health and Education Act allows manufacturers to make claims regarding the benefits from the use of these products (9).

Several workers assessed pharmacists' attitude, knowledge and dispensing practices of herbal products in different countries. Studies in the USA and Italy found that consumers need information on herbal safety. However pharmacists were more likely to answer correctly about the use of herbs rather than about cautions, adverse effects and interactions (10-13). Studies in Australia and Estonia suggested that pharmacists need continuing education regarding herbal medicine (14,15).

In Palestine many herbal products are being marketed, promoted, sold, and dispensed in community pharmacies. Therefore, pharmacists can play a pivotal role in selecting and providing information about these herbal medicines. Although a few studies have measured public interest towards the use of herbal products (16, 17), the attitudes and perception of pharmacists regarding these products has not been evaluated. To our knowledge, there are no published data on the current level of knowledge of community pharmacists in Palestine regarding herbal medicine. Therefore, this study was conducted to examine the community pharmacists' attitudes towards dispensing herbal products and to assess their perception and factual knowledge about the use of such products. Thus the study was intended to address the potential role of community pharmacists as information provider for patients who consume herbal products.

## **Materials and Methods**

### ***Study Design***

This was a cross-sectional study conducted on April 16th, 2011 among community pharmacists in the private sector since most private community pharmacies stock herbal products. Convenience sampling was used for selection of participants from four main cities in north Palestine: Nablus, Jenin, Tulkarm and Qalqilya.

### ***Study Tool***

A questionnaire was developed by four clinical pharmacists from the coauthors. The questionnaire was based on

previously published studies and it consisted of four main domains (demographics, dispensing practice, attitudes and factual knowledge related to herbal products). Demographic data included age, gender, number of years of experience, educational level, and courses about herbal medicine studied during their study. Dispensing practice domain included 4 questions exploring whether they dispense herbal products, whether they use them for self-treatment, whether they provide counseling to their clients regarding herbal products and whether they get inquiries regarding the use of herbal products. In this section, potential answers are always, often, sometimes, rarely and never. The third section included 5 questions on the attitude of community pharmacists towards herbal products. They are: do you agree that herbal products have beneficial effects; do you agree that herbal products have less side effects than conventional medicines; do you agree that herbal products have placebo effect; do you agree that herbal products have been sufficiently studied; and do you agree that herbal products have significant interactions with conventional medicines. Possible answers provided included the following choices: strongly agree, agree, disagree, strongly disagree and I do not know. The last section was divided into 2 parts: part A was a self-rating of knowledge about herbal products, while part B was an factual multiple choice questionnaire test about herbal products. All questions in the test included herbal products that are marketed in Palestine, being used for common ailments like dyslipidemia or have a serious drug interactions or side effects. The test included questions about the following herbal products: garlic, ginkgo biloba, hawthorn, horse chest nut seed, black cohosh, echinacea, senna, valerian root, eucalyptus and capsaicin. The participant scored 1 for each correct answer 0 for each incorrect one. For each participant, a score out of 10 was given based on the total number of correct answers. We finally presented a comparison between our results on the actual pharmacists' knowledge scores in Palestine from this study with final scores published from Saudi Arabia.

### ***Participants' Demographics***

A total of 111 community pharmacists were approached to participate in the study and 100 agreed to participate (Table 1). The number of participants represented approximately 30% of community pharmacists in northern Palestine. Fifty five of the participants were males. The majority of the participants (94%) had a bachelor degree in pharmacy while the remaining had a higher pharmacy degree. The average age of participants was  $33.1 \pm 10.7$  years and the average number of years of experience was  $9.0 \pm 9.4$ . The

majority of the participants (89%) graduated from schools of pharmacy in Arab countries and most participants (94%) had taken courses related to herbal medicine during their study.

### Statistical Analysis

Data were analyzed using Statistical Package for Social Sciences version 16 (SPSS 16). Continuous variables were presented as mean  $\pm$  standard deviation, while categorical variables were presented as frequencies and percentages. Independent sample t test was conducted to detect difference in means of knowledge scores between male and female participants. Pearson correlation was used to explore correlation between knowledge score and number of years of experience. P value  $< 0.05$  indicated significance. No statistical testing was possible for the comparison of final scores in Palestine and Saudi Arabia.

## Results

### Dispensing Practices of Herbal Products (Table 2)

The answers to the question “do you dispense herbal products in your pharmacy”, were as follows: 10% answered always; 25% often; 50% sometimes; 14% rarely and 1% never. The responses to the question related to

counseling customers about herbal products were as follows: 44% always, 29% often, 21% sometimes, and 6% rarely. Less than half of the surveyed pharmacists (44%) reported that they give information and advice to customers about the herbal products when they dispense them. The most commonly dispensing herbal products were tea for weight reduction purposes. Approximately one third of the surveyed pharmacists (35%) reported that they rarely or never used herbal products for self-treatment

### Pharmacists' Attitudes Towards Herbal Products (Table 3)

The majority of participants (91%) agreed that herbal products have beneficial effect. Sixty one percent of participants believed that herbal products may cause fewer side effects than conventional medicines, while 35% of them disagreed. About half of participants (49%) believed that herbal products have placebo effect and about 70% of them agreed that herbal products have significant interactions with conventional medicine. Finally, more than half of the participants (56%) did not believe (disagreed) that herbal products were sufficiently studied.

### Pharmacists' Knowledge of Herbal Products

Characteristic	Number = %
Age distribution (years): ( <i>Younger than 30 / 30-50 / Older than 50</i> )	50/26/24
Gender: <i>Male/Female</i>	55/45
Highest qualification: ( <i>Bachelor/Master</i> )	94/6
Years of experience (years): ( <i>Less than 1/ 1-7 /Longer than 7</i> )	25/31/43
Attending pharmacognosy/alternative medicine/phytochemistry courses: (Yes/No)	94/5

#	Statement	Always	Often	Sometimes	Rarely	Never
1	Do you dispense herbal drugs in your pharmacy	10	25	50	14	1
2	Do you use herbal drugs for self treatment	10	14	41	15	20
3	Do you counsel your customers about using of herbal drugs	44	29	21	6	0
4	Do you get inquiries related to herbal drugs	33	31	25	9	2

Table 3. pharmacists attitude toward herbal drugs (N =100)					
Statement	Strongly agree (%)	Agree (%)	Disagree (%)	Strongly disagree (%)	Don't know (%)
Do you agree that herbal drugs have Beneficial effect	24	67	5	2	2
Do you agree that herbal drugs have less side effect than conventional medicines	17	44	31	4	4
Do you agree that herbal drugs have placebo effect	15	34	34	9	8
Do you agree that herbal drugs have sufficiently studied	2	29	31	25	13
Do you agree that herbal drugs have significant interactions with conventional medicines	5	65	18	2	10
<i>All frequencies represent number of participants because N =100</i>					

Table 4. Pharmacists self-rating for their knowledge about herbal drugs N = 100				
Statement	Very good	Good	Acceptable	Bad
How do you rate your knowledge about herbal drugs in general	7	67	22	4
How do you rate your knowledge about herbal drug interactions	7	51	34	8
How do you rate your knowledge about herbal drug side effects	12	51	30	7
How do you rate your knowledge about herbal drug precautions	13	48	29	10
All frequencies represent number of participants because N =100				

The results of self-rating indicate that the participants believed that their knowledge about herbal products in general, herbal drug interactions, herbal drug side effects and herbal drug precautions was good. Frequencies and percentages for above variables were as follows: 67%, 51%, 51% and 48% respectively (Table 4). Actual test scores were good regarding questions pertaining to Senna contraindications (77%), use of capsaisin (73%) and garlic effect on blood cholesterol level (69%). However, the scores for other question were low (Table 5). There was no significant difference in knowledge score between males and female ( $P = 0.206$ ). A significant negative correlation between knowledge score and number of years

of experience was detected (Figure 1). Crude comparison of the findings of the present study with similar work from Saudi Arabia, showed that actual pharmacists' knowledge scores in all domains were consistently lower in Palestine than in Saudi Arabia (Figure 2).

### Discussion

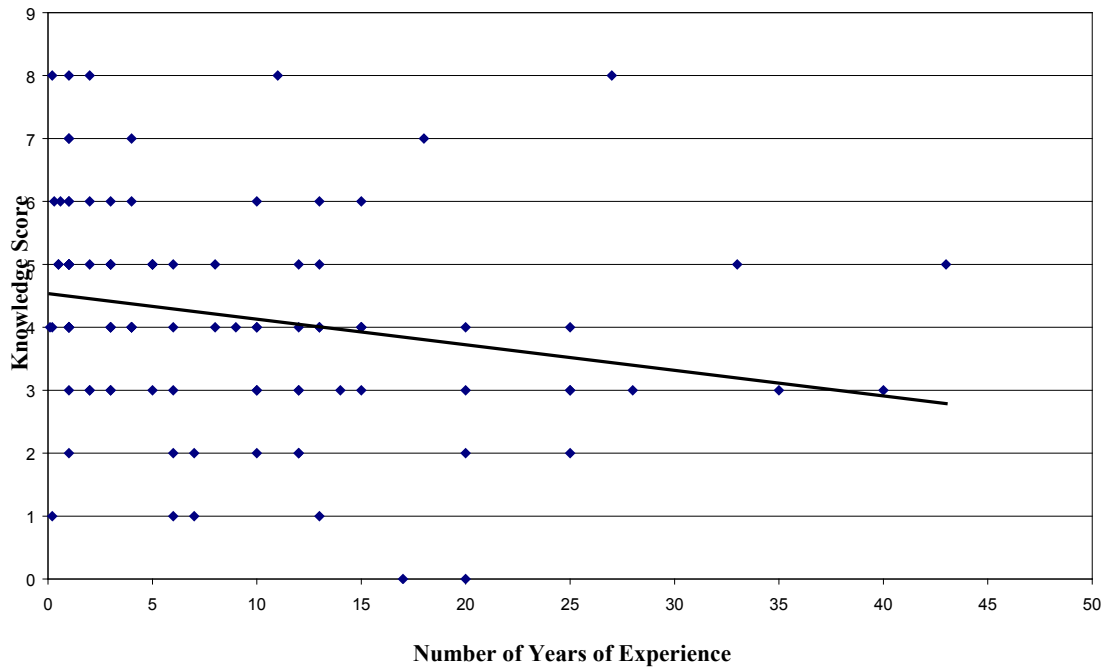
In this study we investigated pharmacists' dispensing practices, perception and knowledge about herbal products available in Palestine. The majority of pharmacists reported receiving inquiries about herbal medicine from the public. Herbal products are commonly used and dispensed in the neighboring countries as well (17-20). Almost all

Table 5: Pharmacists' knowledge about commonly dispensed herbal drugs in Palestinian community pharmacies.		
The text of the multiple choice questions served to all participants.	Pharmacists' Response	
	Correct	Incorrect
Herbal product that may decrease blood cholesterol level a) Garlic    b) ginkgo biloba    c) hawthorn    d) horse chestnut seed	69	31
Herbal product that increase bleeding effect when used with Anticoagulants a) Red yeast rice and CoQ10    b) black tea and chest nut    c) hawthorn and green tea d) Garlic and ginkgo biloba	29	71
The most important side effect of Citrus Aurantium a) anemia    b) hypertension    c) liver toxicity    d) intestinal obstruction	20	80
Herbal product that may cause anxiety and insomnia a) Citrus Aurantium    b) garlic    c) green tea    d) ginkgo biloba	24	76
Black Cohosh used for the following conditions: a) post menopausal symptoms    b) enhance immunity    c) respiratory infections    d) insomnia	23	77
The Echinacea is used for a) cold symptoms    b) urinary tract infections    c) increase alertness    d) ulcers	39	61
Senna is contraindicated in a) pregnancy    b) lactation    c) childhood (less than 12 years)    d) all of the above	77	23
Valerian root should not be used with drugs that treat a) insomnia    b) diarrhea    c) influenza    d) ulcer	47	53
Eucalyptus may interact with a) antacid    b) laxative    c) antihistamine    d) insulin	12	88
Capsaicin was used to treat a) rheumatoid    b) eczema    c) hair loss    d) all of the above	73	27

pharmacists in Saudi Arabia and United Arab Emirates reported dispensing herbal medicines in community pharmacies (21, 22). More than half the pharmacists in Kuwait and approximately 80% in UAE used herbal medicines for themselves (22, 23). Counseling consumers about safe use of herbal medicine was more in our study compared to that reported for other countries in the Middle East (21, 22). Our findings also showed that herbal medicines were commonly purchased by the general public and commonly used for self-therapy by pharmacists. A possible reason for this is the public and pharmacists' belief that herbal medicine is more natural and safer than modern pharmaceuticals. Actually, 61% of pharmacists too in our study believed that herbal medicine was beneficial and

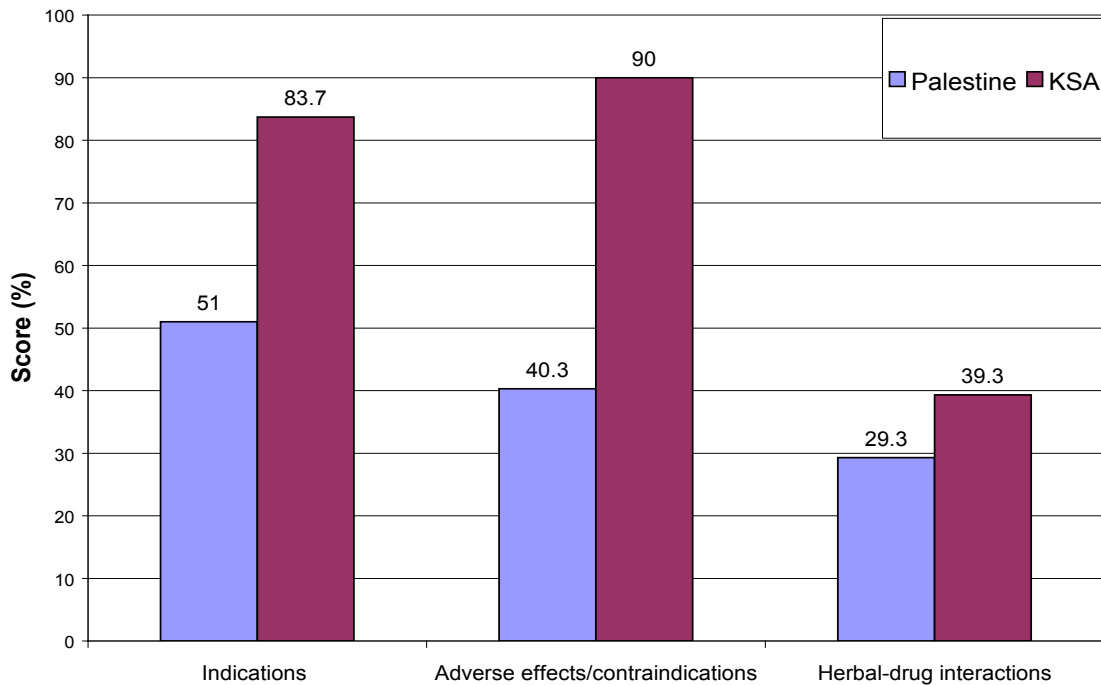
safer than conventional medicine. This percentage is greater than that reported for other countries (13, 21, 22). However, pharmacists' belief about safety of herbal medicine might be ill-founded. It is well established that harmful effects of herbal medicines could originate from biologically active constituents, contaminants, and herb-drug interactions (24-26). Conventional and herbal medicines are often concomitantly used and this could result in herbal-drug interactions (7, 8). This becomes of paramount importance particularly when it is taken often without consulting a health practitioner (7). A classic example would be that a safe level of oral anticoagulants may be exceeded if it is used together with herbs such as garlic, ginkgo, and ginseng (27). Pharmacists must be aware of these drug-herb interactions

**Relationship Between Number of Years of Experience and Knowledge Score**



**Figure 1.** Relationship between pharmacists’ knowledge toward herbal products and years of experience

**Actual Knowledge Scores in Palestine and KSA**



**Figure 2.** Comparison of actual pharmacists’ knowledge scores in Palestine in the present study with those reported from Saudi Arabia (see text).

to educate their patients. It is crucial that the pharmacist enquire to establish if their patients are using such herbs in order to avoid potential drug-herb interactions.

Pharmacists' perception of their knowledge regarding herbal medicines was found to be exaggerated in the present study. Majority of pharmacists rated their knowledge as good while the actual testing scores using factual questionnaire did not substantiate this impression. The tests indeed revealed that their knowledge was actually poor. These findings are concordant with those reported from Saudi Arabia. Self-rating of knowledge in Saudi Arabia was also higher than the actual ones; more than 80% of pharmacists claimed they had good knowledge about herbal medicine. In our study, the actual test revealed that about half of participants did not know the correct indications for use of herbal medicines, more than half of the participants were actually ignorant of the adverse effects and contraindications of herbal preparations and about 80% had problems with herbal-drug interactions. In addition, our study showed that this knowledge was highest among new graduates who had taken relevant courses about herbal medicines during their undergraduate studies and declined with time. Though the comparisons could not be subjected to statistical testing, the actual knowledge of pharmacists regarding herbal medicine was better in Saudi Arabia than in Palestine. In the present study, whereas questions about the indications and adverse effects/contraindications of herbal medicines were answered correctly by 80% of the respondents, there was a major deficiency in their knowledge of the herbal-drug interactions where only 39.3% answered them correctly. Our study has some limitations such as small sample size and the fact that the questionnaire and test questions for knowledge were constructed by authors and have not been validated. However, it remains true that our study was eye opening exploration that needs to be followed by a national survey in the whole of Palestine. Furthermore, the fact nature of questions used to test knowledge used in this study and that from Saudi Arabia were different precludes reliable direct comparison between the two countries.

In conclusion, the findings from this study demonstrated that herbal products are commonly dispensed in Palestine putting increasing pressure on community and hospital pharmacists to acquire more working knowledge of the indications, adverse effects and interactions of herbal medication. It has been suggested herbal medicines for pharmacy students as part of the undergraduate curriculum and/or be part of continuing education programs for

practicing pharmacists focusing on indications, drug interactions, adverse events and precautions of herbal medicines to enable them to provide accurate information to consumers on the safe use of herbal products. The discordance between self-rating and the actual test results of pharmacists' knowledge is an alarming finding that could jeopardize the safety of consumers. Perhaps this particular aspects of herbal medicine should routinely be covered in the contents of all continuous professional development programs.

## References

1. Hanssen B, Grimsgaard S, Launsø L, Fønnebø V, Falkenberg T, Rasmussen NK. Use of complementary and alternative medicine in the Scandinavian countries. *Scand J Prim Health Care* 2005;23(1):57-62.
2. Joos S, Musselmann B, Miksch A, Rosemann T, Szecsenyi J. The role of complementary and alternative medicine (CAM) in Germany - a focus group study of GPs. *BMC Health Serv Res* 2008;8:127.
3. McFarland B, Bigelow D, Zani B, Newsom J, Kaplan M. Complementary and alternative medicine use in Canada and the United States. *Am J Public Health* 2002;92(10):1616-8.
4. Upchurch D and Chyu L. Use of complementary and alternative medicine among American women. *Women's Health Issues* 2005;15:5-13.
5. **Robinson** MM and Zhang X. *The world Medicine Situation 2011 Traditional Medicine: Global Situation, Issues and Challenges*. WHO publications. 3rd Ed. Geneva. 2011.
6. **WHO**. *WHO Traditional medicine strategy 2002–2005* [an Internet Document; available from: <http://apps.who.int/medicinedocs/en/d/Js2297e/>, 2002
7. Izzo AA, Ernest E. Interactions between herbal medicines and prescribed drugs: an updated systematic review. *Drugs* 2009; 69(13):1777-98.
8. Lai MN, Lai JN, Chen PC, Hsieh SC, Hu FC, Wang JD. Risks of kidney failure associated with consumption of herbal products containing Mu Tong or Fangchi: a population-based case-control study. *Am J Kidney Dis* 2010;55(3):507-18.
9. **FDA**, Dietary supplement Health and Education Act 1994, Public Law 103-417, 103rd Congress page. [Internet Document; available from: <http://www.fda.gov/opacom/laws/dshea.html>].
10. Bacchini M, Cuzzolin L, Camerlengo T, Velo G,

- Benoni G. Phytotherapeutic compounds: the consumer-pharmacist relationship. *Drug Saf* 2008;31(5):424-7.
11. Chang ZG, Kennedy DT, Holdford DA, Small RE. Pharmacists' knowledge and attitudes toward herbal medicine. *Ann Pharmacother* 2000;34(6):710-5.
  12. Cuzzolin L and Benoni G, Attitudes and knowledge toward natural products safety in the pharmacy setting: an Italian study. *Phytother Res* 2009;23(7):1018-23.
  13. Welna EM, Hadsall RS, Schommer JC. Pharmacists' personal use, professional practice behaviors, and perceptions regarding herbal and other natural products. *J Am Pharm Assoc* 2003;43(5):602-11.
  14. Naidu S, Wilkinson JM, Simpson MD. Attitudes of Australian pharmacists toward complementary and alternative medicines. *Ann Pharmacother* 2005;39(9):1456-61.
  15. Volmer D, Lilja J, Hamilton D, Bell JS, Veski P. Self-reported competence of Estonian community pharmacists in relation to herbal products: findings from a health-system in transition. *Phytother Res* 2010;25(3):381-6.
  16. Sawalha AF. Poison Control and the Drug Information Center: the Palestinian experience. *Isr Med Assoc J* 2008;10(11):757-60.
  17. Sawalha AF. Complementary and alternative medicine (CAM) in Palestine: use and safety implications. *J Altern Complement Med*. 2007;13(2):263-9.
  18. Al-Saeedi M, Elzubier AG, Bahnassi AA, Al-Dawood KM. Patterns of belief and use of traditional remedies by diabetic patients in Mecca, Saudi Arabia. *East Mediterr Health J* 2003;9(1-2):99-107.
  19. Awad A, Al-Rabiy S, Abahussain E. Self-medication practices among diabetic patients in Kuwait. *Med Princ Pract* 2008;17(4):315-20.
  20. Azaizeh H, Saad B, Cooper E, Said O. Traditional Arabic and Islamic Medicine, a Re-emerging Health Aid. *Evid Based Complement Alternat Med* 2010;7(4):419-24.
  21. Alkharfy KM, Community pharmacists' knowledge, attitudes and practices towards herbal remedies in Riyadh, Saudi Arabia. *East Mediterr Health J* 2011;16(9):988-93.
  22. Fahmy SA, Abdu S, Abuelkhair M. Pharmacists' attitude, perceptions and knowledge towards the use of herbal products in Abu Dhabi, United Arab Emirates. *Pharmacy Practice (internet)* 2010;8(2):109-15.
  23. Abahussain NA, Abahussain EA, Al-Oumi FM. Pharmacists' attitudes and awareness towards the use and safety of herbs in Kuwait. *Pharmacy Practice* 2007;5(3):125-9.
  24. Dwivedi S, Aggarwal A, Sharma V. Cardiotoxicity from 'safe' herbomineral formulations. *Trop Doct* 2011;41(2):113-5.
  25. Kim SJ, Lu Y, Kwon O, Hwangbo K, Seo CS, Lee SH et al. Manassantin A isolated from *Saururus chinensis* inhibits 5-lipoxygenase-dependent leukotriene C4 generation by blocking mitogen-activated protein kinase activation in mast cells. *Biol Pharm Bull*. 2011;34(11):1769-72.
  26. Pearl PL, Drillings IM, Conry JA. Herbs in epilepsy: evidence for efficacy, toxicity, and interactions. *Semin Pediatr Neurol* 2011;18(3):203-8.
  27. Spolarich AE, Andrews OL. An examination of the bleeding complications associated with herbal supplements, antiplatelet and anticoagulant medication *J Dent Hyg* 2007;81(3):67.