

**ORIGINAL PAPER****Determination of the Herbal Products Used by Patients with Ischemic Heart Disease Prior to Surgery****Aynur Koyuncu, RN**

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**Abstract**

**Objective:** To determine the herbal product usage status of patients with the diagnosis of ischemic heart diseases (IHDs), who had been hospitalized for coronary by-pass grafting surgery.

**Methods:** Among the patients hospitalized in the cardiovascular department for cardiac surgery due IHDs between October 2009 and May 2010, those who were over 18 years of age and who met the inclusion criteria were included in the study. Data were collected using Form 1 (demographic data) and Form 2 (data of herbal use) which were developed by the researchers.

**Results:** Ninety-seven (32.55%) of 298 patients included in the study had mentioned a type of herbal product use in the three months previous to the study. Statistically significant differences were found between the demographic characteristics of the patients with or without herbal product use, including gender, educational status, the place they lived in, the occupational status, other diseases and the age ( $p<0.05$ ). It was determined that none of the participants ( $n=298$ ) had any information on the possible interaction of the drugs with the herbal products, and that none of the herbal product users ( $n=97$ ) had informed the healthcare providers about the subject.

**Conclusion:** Cardiovascular diseases constitute an important group of diseases which may only be diagnosed and treated by evidence-based, multidisciplinary approaches, and they remain the leading causes of all deaths. It is considered that the use of herbal products by the recommendations of friends or the people in the media is extremely dangerous.

**Key Words:** herbal products, ischemic heart disease, coronary by-pass grafting surgery, nursing

## Introduction

Complementary or alternative therapy (CAT) applications are being increasingly used both in our country and the rest of the world. CAT is defined as a comprehensive field of medicine, which includes all the applications, methods, accompanying theories and beliefs of health other than the conventional medical applications, and it is divided into different classes. These classes include natural products (such as herbs, vitamins, minerals, fish oil), applications intended for mind and body wellness (such as meditation and acupuncture), and applications intended for hand and body wellness (such as massage) (Biçen et al., 2012, Doğan Karabudak-Abuaf & Karabacak 2012, Kraft, 2009). Herbal products are currently the most commonly used group of CAT for health. The use of herbal products has been considerably increasing, particularly in Europe and the United States (Doğan Karabudak-Abuaf & Karabacak 2012, Samenuk et al., 2002, Zick Blume & Aaranson 2005).

Despite the advances in medical and surgical treatment techniques, cardiovascular diseases are still the most common cause of death worldwide. For the treatment of ischemic heart disease (IHD), which is the most frequent type of cardiovascular diseases and characterized by ischemia of cardiac muscle cells, either medical or surgical approaches are applied according to the condition of the patient. The regular use of drugs by patients with IHD during the medical treatment and continuation of the follow-up controls are important in the progression of the disease. All of the applications that decrease or increase the effects of the drugs used by these patients may adversely affect the condition of the patient (Levis Heitkemper & Dirksen 2004). In addition medication safety is an important aspect of quality of healthcare (Rekleiti et al., 2012).

It has been shown in many studies on different types of patients that CAT applications, and particularly the use of herbal products are considerably widespread in our country (Kurt et al., 2004, Uğurluer et

al., 2007). Despite the great number of patients with cardiovascular diseases, the number of studies investigating the herbal products used by these patients is limited in our country (Yılmaz et al., 2007). The aim of this study was to determine the status of the use of herbal products in patients with the diagnosis of IHD, who had been hospitalized for planned coronary bypass grafting surgery. The aim of the study was the determination of the herbal products used by the patients, not only for the disease that they were hospitalized for, but also for any other health-related problems.

## Methods

### Design and Sample

This study was prospective and descriptive study design. The study was started upon approval of the local ethics committee of the hospital and having obtained written informed consents from the participants (Ethical committee approval no.:1491-708-10/1539). The investigation conforms to the principles outlined in the Declaration of Helsinki.

The universe of the study was formed by patients who had been hospitalized for cardiac surgery in the cardiovascular surgery unit of a training and research hospital (N=344). Among the 344 patients hospitalized in the pre-operation department, 328 who had fulfilled the inclusion criteria were informed about the aim of the study and invited to fill out the survey. Among those, 18 refused to participate in the study, 5 changed their mind and gave up, missing information was present in the surveys in 4 patients, and 1 was excluded since the clinical condition of the patients had deteriorated and was transferred to the intensive care unit. The study was completed by 298 (298/328X100= 90.85%) patients.

### Inclusion criteria

Being 18 years of age and older, having received the diagnosis of IHD for at least 3 months, to have been planned to undergo coronary artery bypass grafting surgery,

hospitalization in the cardiovascular surgery clinics for an elective surgery, having no hearing or understanding problems, and willing to participate in the study.

### Data collection

Two survey forms had been developed by the investigators for the data collection (Form 1 and 2). Form 1 included questions intended for determining the demographic properties and the disease characteristics of the patients (age, educational status, occupation, diagnosis, used drugs). Form 2 included open-ended and multiple-choice questions regarding the use of herbal products. The survey forms were given to the patients in a closed-envelope while they were in the pre-operation unit, and were collected in another closed-envelope when they had been filled out. The patients were asked not to put their names on the surveys and were informed that the outcomes of the study were not going to be used for any other purpose than the study. The investigators visited the patients who had been given the surveys to fill out on the next day, and the forms were collected.

### Statistical analysis

The data were analyzed using the SPSS 16.0 for Windows program. The descriptive statistics were expressed in numbers (n) and percentages (%). The comparative statistics that were performed included the Independent Samples *t* test for the parametric variables (such as age), the Kolmogorov–Smirnov test was performed for the non-parametric variables where two independent groups were compared, and the Kruskal Wallis test was used for the non-parametric variables where three or more groups were compared. A *p* value of <0.05 was accepted as statistical significance.

### Results

Ninety seven (%32.55) of the 298 patients included in the study had mentioned a type of herbal product use within the 3 months previous to the study.

The demographic characteristics of the herbal product user or non-user patients have been demonstrated in Table 1. The number of

women (29,9%), university graduates (35.1%), housewives (28.9%), those living in cities (77.3%) and those with other types of chronic diseases (74.2%) in the herbal product using group were found to be higher compared to the non-using group. The mean age in the herbal product using group was higher than that of the non-using group (61.02 ±8.62). The differences between the groups regarding gender, educational status, the place of living, occupational status, other diseases and the mean ages were found to be statistically significant (*p*<0.05) (Table 1).

The herbal products used by 97 participants have been displayed in Table 2. The most preferred herbal products were thorn apple (15.7%), garlic (15.2%) and stinging nettle (12.7%). All of the patients (n=97) had mentioned that they had bought these products from markets that sold food products, herbalists and open town markets. None of them had used a herbal product in the form of a packaged capsule or tablets with a nutritional supplement label (Table 2). The most frequent reasons for use of herbal products were for the control of blood pressure (28.8%) and blood sugar (23.6%). The least frequent reason was for improvement of obstructed vessels (3.4%) (Table 3).

The regular drug use of participants with or without herbal product use has been demonstrated in Table 4. The compliance of the herbal product users to medical therapy was found to be higher due to their regular drug use for the treatment of IHD (Table 4). Most of the patients participating in the study (n=270, 90.6%) had information on the herbal products. 117 (43.3%) of the patients had obtained this information from the media (television, radio, internet, newspapers, magazines, etc), 31 (11.5%) had obtained relevant information from relatives or friends, and 122 (45.2%) had obtained from the media and the friends. None of the patients (n=298, 100%) had any information regarding the possible interactions between these herbal products and the drugs. Furthermore, none of the herbal product users (n=97) had informed the healthcare workers about this use.

**Table 1: The distribution of the patients according to their use or non-use of herbal products (N=298)**

Characteristics	Herbal product user (n=97) n (%)	Herbal product non-user (n=201) n (%)	Test	P
<u>Gender</u>				
Female	29 (29.9)	31 (15.4)	Z=1.368 <sup>#</sup>	P=0.047*
Male	68 (70.1)	170 (84.6)		
<u>Education</u>				
Primary	48 (49.5)	116 (57.7)	X <sup>2</sup> =8.382 <sup>###</sup>	0.015*
Secondary	15 (15.5)	45 (22.4)		
University	34 (35.1)	40 (19.9)		
<u>Marital status</u>				
Married	87 (89.7)	187 (93.0)	Z=0.466 <sup>#</sup>	0.982
Single	10 (10.3)	14 (7.0)		
<u>Place of living</u>				
City	75 (77.3)	108 (53.7)	X <sup>2</sup> =15.310 <sup>###</sup>	0.000**
District	18 (18.6)	76 (37.8)		
Town	4 (4.1)	17 (8.5)		
<u>Occupational status</u>				
Housewife	28 (28.9)	28 (13.9)	X <sup>2</sup> =14.856 <sup>###</sup>	0.002*
Worker	49 (50.5)	101 (50.3)		
Retired	20 (20.6)	72 (35.8)		
<u>Other chronic diseases</u>				
Present	72 (74.2)	53 (26.4)	Z=3.676 <sup>#</sup>	0.000**
Absent	25 (25.8)	148 (73.6)		
<u>People lived with</u>				
Alone	6 (6.2)	8 (4.0)	X <sup>2</sup> =4.915 <sup>###</sup>	0.086
With wife/husband	63 (64.9)	155 (77.1)		
With wife/husband and children	28 (28.9)	38 (18.9)		
Age (mean±SD***)	61.02 ±8.62	53.77 ±10.46	t=6.330 <sup>###</sup>	0.000**

\*P < 0.05, \*\*p < 0.001, \*\*\* SD: standard deviation, <sup>#</sup> Kolmogorov-Smirnov test, <sup>###</sup> Kruskal Wallis test, <sup>####</sup> Independent Samples t test

**Table 2. The distribution of the herbal products used by the patients (n=97)**

Herbal products	Number of patients (%)	
Thorn apple	37	(15.7)
Garlic	36	(15.2)
Stinging nettle	30	(12.7)
Downy woundwort	27	(11.4)
Lemon, lemon juice	25	(10.6)
Walnut	20	(8.5)
Flaxseed	19	(8.3)
Thyme	15	(6.2)
Pomegranate	14	(6.0)
Apple vinegar	13	(5.5)
Ready to use food supplement (tablet/capsule)	0	(0.0)
TOTAL	236	(100.0)*

\*n is folded due to multiple herbal product use

**Table 3. Reasons for herbal product use (n=97)**

Reasons	Number of patients (%)
To reduce the blood pressure	60 (28.8)
To reduce the blood sugar	49 (23.6)
To support the immune system	40 (19.2)
To reduce pain	29 (13.9)
To urinate	23 (11.1)
To improve the obstructed vessels	7 (3.4)
TOTAL	208 (100)*

\*n is folded due to multiple answers given by the patients. The calculation of percentages was performed according to the number 208.

**Table 4. Drug use of the patients for ischemic heart diseases (N=298)**

	Herbal product user (n=97)		Herbal product non-user (n=201)		Test	p
	Number	%	Number	%		
<u>Drug usage situation</u>						
Present	93	95.9	124	61.7	Z=-6.205 <sup>#</sup>	0.000*
Absent	4	4.1	77	38.3		
<u>Regular drug usage situation</u>						
Yes	82	84.5	97	48.3	X <sup>2</sup> =36.564 <sup>##</sup>	0.000*
Sometimes	15	15.5	94	46.8		
No	0	0	10	4.9		

\*p<0.05, <sup>#</sup> Kolmogrov-Simirnow test, <sup>##</sup> Kruskal Wallis test

## Discussion

In our study, about one third of the patients who had been hospitalized in the cardiovascular surgery department with the diagnosis of IHD had mentioned that they had used a herbal product in the previous three months. In the study of Frishman et al., (Frishman Sinatra & Moizuddin 2004), it was observed that approximately half of the patients had used a herbal product including 142 different types, or an alternative treatment. In the study of Tachjian et al. herbal products constituted one third of the non-drug methods used by the patients with cardiovascular diseases (Tachjian, Maria & Jahangir 2010). When these findings were assessed together, it is clear that a part of the patients with cardiovascular diseases used herbal products. The wide use of herbal products, which is the most important component of CAT applications, have revived the effects of these products on the general health and the issue of drug interactions (Dasgupta, 2008, Valli & Giardina 2002).

Studies investigating the demographic and disease-related factors on the herbal product use have demonstrated that women, young people, high school graduates and people with high income used herbal products more frequently (Tachjian, Maria & Jahangir 2010, Wang et al., 2003, Yeh et al., 2006). In our study, although the majority of the herbal product users were (70.1%) male, the number of female patients in this group was approximately two-fold higher than the number of those in the non-user group (29.9% and %5.4%, respectively). Likewise, the number of university graduates was higher in the herbal product user group. These findings support the findings in the literature that reveal a higher herbal product use among women and high graduates. In contrast to the literature (Tachjian, Maria & Jahangir 2010, Wang et al., 2003, Yeh et al., 2006), herbal products were mostly preferred by elderly patients or those with chronic diseases in our study.

It was determined that most of the herbal products used in our study were natural and unprocessed, and included mostly thorn apple, garlic and stinging nettle. Garlic and

stinging nettle were found to be the most frequently used herbal products in similar studies as well (Ernst, 2003, Tachjian Maria Jahangir 2010, Valli & Giardina 2002). Similar to our study, the use of these products were commonly intended to reduce the blood pressure and blood sugar. The third most frequent reason for the use of herbal products in our study was to support the immune system. The first three reasons were also the same in other countries (Biçen et al., 2012, Edwards Colquist & Maradiegue 2005, Howell et al., 2006, Kurt et al., 2004, Paharand et al., 2003, Yılmaz et al., 2007). The improvement of obstructive vessels was the least frequent reason of herbal product use. This may either be due to the non-generic use of herbal products in this field or to the design of the studies.

Studies suggest that herbal products, especially those obtained under the title "natural" have been evaluated as innocent by patients, and thus have easily been used for many purposes (Astin, 1998, Awang Fugh-Berman, 2002, Edwards, Colquist & Maradiegue 2005, Meriçli, 2007, Yeşilada, 2007). Since the herbs are assessed under the category of nutrients, they are not subjected to the control and regulations that are implemented for drugs (Valli & Giardina 2002). The metabolism and the bioavailability of drugs may be altered, particularly in elderly patients or those regularly using drugs. Therefore, the interactions between the prescribed drugs and the herbal products are particularly important, and the unexpected side effects or the decrease in the effect of the present drug may be observed in this group (Ernst, 2003). The most important problem regarding the use of these herbal products is that their drug interactions have not been clearly demonstrated (Awang & Fugh-Berman 2002, Kraft, 2009).

Most of the herbal product using patients in our study had regular drug use for their IHDs. It was determined in some studies that the patients believed that the use of herbal products together with the prescribed drugs had synergistic effects on their diseases (Astin, 1998, Edwards Colquist &

Maradiegue 2005, Frishman, Sinatra & Moizuddin 2004, Yılmaz et al., 2007). In our study, it was observed that the patients using herbal products had a more regular drug use, which may be due to a similar belief. Nevertheless, these kinds of beliefs carry the risk of uncontrolled and excessive consumption of the herbal products. Currently, herbal-based active ingredient-containing drugs used in modern therapy include Digitalis lanata, Digitalis purpurea (Digoxin®), Acetyl Salicylic Acid (Aspirin®) and Atropa belladonna (Atropine Sulfate®), which carry the risk of fatal overdose when used with herbal products including the same active ingredient (Izzo et al. 2005, Valli & Giardina 2002, Villegas et al., 2001). Furthermore, cases of intoxications due to drug interactions or misuse of various herbs have been reported, which were related to their long-term or excessive use (Ernst E 2003, Izzo et al. 2005, Pharand et al. 2003, Yeşilada 2007). There is also evidence that the herbal products may include such ingredients that exacerbate the medical situations of the patients (Göz 2006, Howell et al., 2006, Izzo et al., 2005).

It is known that some herbal products may interact with various prescribed drugs used in patients with cardiovascular diseases (cardiac glycosides, inotropes, coagulants-anticoagulants,  $\beta$ -blockers, nitrates, statins, etc) and cause unwanted effects (Mashour, Lin & Frishman 1998, Samenuk et al., 2002). These herbs may also interact with the metabolites of other drugs, in particular on the coagulation mechanisms in certain conditions and cause unexpected effects (Izzo et al., 2005, Kraft 2009, Liu et al., 2000, Stys et al., 2004, Tachjian Maria & Jahangir 2010, Wood et al., 2003). Therefore, it should not be forgotten that herbal products are not always reliable, especially for those with regular drug use. Furthermore, the use of herbal products that increase the effects of anticoagulant drugs prior to any surgical operation would increase the tendency towards bleeding and cause a potential risk both during and after surgery (Tokem 2006).

Similar to many other studies, the information on herbal products in our study

had been obtained from the media or the people around the patients as well (Biçen et al., 2012, Kurt et al., 2004, Tokem 2006, Wood et al., 2003). In one study, the herbal products had been recommended by the primary physicians of the patients (Wood et al., 2003). In our study, none of the patients using herbal products had reported this use to their healthcare staff. The situation was the same in many other studies (Biçen et al., 2012, Corso et al., 2007, Howell et al., 2006, Wang Caldwell-Andrews & Kain 2003.). This attitude of the patients may be due to the concern of a possible reaction from the healthcare staff. Furthermore, the common belief of the society that herbal products are safe and not informing the herbal use to the healthcare personnel makes this problem difficult to solve (Corso et al., 2007, Frishman, Sinatra & Moizuddin 2004, Mashour, Lin & Frishman 1998, Tachjian, Maria & Jahangir 2010). On the other hand, patients may not be aware of the necessity to disclose this information. The finding that none of the patients participating in our study had any idea about the possible interaction of the herbal products they used with their drugs, supports this suggestion. The addition of questions on this issue for the anamnesis and medical history obtained on admission may be useful.

### Limitations of the study

This study has several limitations. First of all since this is a single-center study performed on a limited number of patients during a certain period, the outcomes cannot be generalized. Secondly, not all of the patients may have informed the healthcare workers about their herbal product use due to the concern of a possible reaction. Furthermore, the products used by the patients may be forgotten due to elderly age. Despite these limitations, this study is the first to investigate the issue in our country, and has remarkable outcomes that provide information on the potential of the patients to use herbal products.

### Conclusion

Cardiovascular diseases constitute an important group of diseases, which may only

be diagnosed and treated by evidence-based, multidisciplinary approaches, and are still the leading causes of all deaths. Herbal product use due to different reasons is common among these patients. When the possible interactions with the drugs used for the medical treatment of these patients are considered, the use of these herbs may result in serious problems. The non-awareness of the healthcare staff about the herbal products used by the patients and the severity of the condition make the problem difficult to solve. It is extremely wrong to use herbal products suggested by the media or the friends for the treatment of cardiovascular diseases. Furthermore, it is impossible for the healthcare workers to recommend herbal products to the patients without scientific evidence. It was concluded that it would be useful to educate the healthcare staff on the subject, provide information about the products used by the patients and provide education on the subject for the patients. Moreover, further randomized and controlled studies investigating the effects of herbal products used by patients with cardiovascular diseases should be conducted in order to provide sufficient evidence for the counselling and treatment of these patients.

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