I. INTRODUCTION

Herbs are defined as leaves of low-growing shrubs. Examples are parsley, chives, marjoram, thyme, basil, caraway, dill, oregano, rosemary, savory, sage and celery leaves. These can be used fresh or dried. Dried forms may be whole, crushed, or ground (Rathore and Shekhawat, 2008), whereas spices are defined by the US Food and Drug Administration as “aromatic vegetable substances, in the form of whole, broken, or ground, whose significant function in food is seasoning rather than nutrition. Spices usually come from the bark (cinnamon), root (ginger, onion and garlic), buds (cloves, saffron), seeds (yellow mustard, poppy and sesame), berry (black pepper), or the fruit (allspice, paprika) of tropical plants and trees. Many dehydrated vegetable seasonings are available. These include onion, garlic, sweet peppers, mint, mixed vegetables and freeze-dried chives and shallots (Hadacek, 2002). Thousands of chemical structures have been identified in plant foods. Many are found in herbs and spices. Herbs and spices are used for seasoning, nutrition, beverages, cosmetics, dye, medicines, smoke and industrial purpose. Herbs and spices can have complementary and overlapping actions, including antioxidant effects, modulation of detoxification enzymes, stimulation of the immune system, reduction of inflammation, modulation of steroid metabolism, and antibacterial and antiviral effects in human (Lampe, 2003).

The use of herbs and spices in cooking offers the chance to prepare exotic, gourmet dishes, or cultural meals and a way to cut or save calories and fat in cooking, it may also moderate dietary levels of fat, sugar and sodium. The calories in herbs and spices are far less than in breading, batters, gravies, sauces and fried foods. Cost savings are realized by reducing the number of ingredients in preparation and/or by the possibility of dressing up inexpensive foods for a special meal. Many people look for flavors to substitute for salt or sodium. A teaspoon of salt has 2300 mg sodium-almost the amount recommended as the daily requirement. Many other condiments as well as packaged and processed foods contain around 1000 mg salt. Seasoning salts are regular salt with seasoning, whereas one teaspoon of most herbs and spices contains few calories and little or no sodium. Herbs and spices give appetite and flavor to unsalted foods (Sharma et al., 1989).

In the last decade, researchers have also focused on new group of nutrients which has shielding effects against cell oxidation. These food groups have been classified as
functional foods. The value of functional foods has been recognized for their health benefits (Klein et al., 2000). Life expectancy continues to rise, as does the contribution made by older individuals to the total population. Heart disease continues to be a major cause of death; cancer, osteoporosis and arthritis remain highly prevalent. Though genetics play a major role in the progress of these diseases, by and large most are considered preventable or could be minimized by, a proper diet, physical activity, weight management and a healthier lifestyle including environment. Functional foods can prevent or delay the onset of chronic diseases as well as provide basic nutritional requirements (Medoua et al., 2009). Nutraceuticals (or functional foods) which contain phytochemical constituents can have long-term health promoting or medicinal qualities. Although the distinction between medicinal plants and nutraceuticals can sometimes be indistinguishable, a primary characteristic of the latter is that nutraceuticals have a nutritional role in the diet and the benefits to health may arise from long-term use as foods (i.e. chemoprevention) (Korver, 1998).

In contrast, many medicinal plants exhibit specific medicinal actions without serving a nutritional role in the human diet and may be used in response to specific health problems over short- or long-term intervals. For many of the medicinal plants of current interest, a primary focus of research to date has been in the areas of phytochemistry, pharmacognosy, and horticulture. In the area of phytochemistry, medicinal plants have been characterized for their possible bioactive compounds, which have been separated and subjected to detailed structural analysis. Research in the pharmacognosy of medicinal plants has also involved assays of bio-activity, identification of potential modes of action, and target sites for active phytomedicinal compounds.

There is scientific evidence that dietary antioxidants play an important role in human health (Liu, 2003). Free radicals have been associated in many diseases such as diabetes, aging, neurodegenerative diseases, atherosclerosis, carcinogenesis, inflammation and metabolic disorders (Ames et al., 1993; Yu, 1995; Halliwell and Gutteridge, 1999) and antioxidants can react with free radicals to neutralize its oxidative properties and prevent cell wall damage and other detrimental effects. The major components that contribute to the antioxidant capacity of foods are polyphenols, carotenoids and vitamin C and E (Medoua et al., 2009) and in several studies antioxidant activity of foods and isolated
components has been reported (Lako et al., 2007; Podsedek, 2007; Wojdylo et al., 2007b).

Antioxidants are compounds that can delay or inhibit the oxidation of lipid or other molecules by inhibiting the initiation or propagation of oxidative chain reactions. Nowadays importance of antioxidant is increasing because of the changes in the life style, increased intake of chemical additives through processed foods, stress, air pollution etc. Intake of food with high antioxidant content should be increased to inhibit damages to the cell wall, cancer and coronary heart diseases. Antioxidants are mostly present in the plant tissue. Vitamin E, C and carotenoids are common antioxidant but also large amount of antioxidant other than these are present in plant foods. These compounds are mainly phenolic components such as flavonoids, phenolic acid and phenolic diterpenes (Javanmardi et al., 2003).

Antioxidants are widely employed to increase the shelf life of lipid and lipid containing food products and to reduce wastage by inhibiting and delaying oxidation and they are also used as food preservatives (Cherbuliez and Domerego, 2003). There are two kinds of antioxidants, natural and synthetic antioxidants. Restriction on the use of synthetic antioxidants is being imposed due to their carcinogenicity (Grice, 1988). Vitamin C, carotenoids and tocopherols are most important natural antioxidants which are also used in industry to improve shelf life of product. Other than these antioxidants, fiber, polyphenols, flavonoids, conjugated isomers of linoleic acid, soy protein, isoflavones, selenium, chlorophyllin, glutathione, protease inhibitors, sulphides, and catechin are natural antioxidants found. Since each of the components is different in nature, different solvent system has been used for extraction of sample for estimation of antioxidant compound and antioxidant activity of sample (Chavan et al., 2001). Siddhuraju and Becker (2003) reported the main sources of natural antioxidants as spices and herbs.

Petals of borage (*Echium amoenum*) belonging to *Borago officinalis* family is a popular Iranian herb which is used as a decoction. Apart from its medicinal properties, it is mostly used to relieve stress. *E. amoenum* has shown anxiolytic effect in mice (Shafaghi et al., 2002; Rabbani et al., 2004) and has the ability to enhance the cellular immune response (Amirghofran et al., 2000).
In-vivo and in-vitro studies suggest a high antioxidant component and activity in petals of borage (Ghassemi et al., 2003; Ranjbar et al., 2006).

The phytochemical analysis of *E. amoenum* revealed that petals of this plant have anthocyanidine (13%), flavonoid aglycons (0.15%), traces of alkaloids as reported by (Delorme et al., 1977; Anon, 2002), volatile oils (0.05%) (Ghassemi et al., 2003) and rosmarinic acid (Mehrabani et al., 2005b). Volatile compounds (0.05%) include octadecane, heptadecane, viridiflorol, alpha cadinene and δ-cadinene. δ-cadinene (24.25%) is the major volatile component (Ghassemi et al., 2003). The antibacterial properties of borage are reported by different authors (Abolhassani, 2004; Mahony et al., 2005; Jahandideh et al., 2011).

Valerian root (*Valerian officinalis*) belonging to valerianaceae is a well known herb which is used worldwide as a sedative and sleep aid medicine. Muller and Klement, (2006) stated valerian could sedate the agitated person and stimulate the fatigued person, bringing about a balancing effect on the system.

Ginger (*Zingiber officinale*) is strongly aromatic, pungent and a very common spice used all over the world. It has been used as a spice and as natural additive for more than 2000 years (Bartley and Jacobs, 2000) Because of its both nutritional and medicinal benefits ginger extract is also known as functional food. It is also an important ingredient of many herbal formulations and used as carminative, pungent, stimulant, consumed widely for indigestion, stomach ache, morning sickness, nausea, malaria and fevers. Its traditional medicinal uses are also listed for abdominal pain, chest congestion, chronic bronchitis, colic and vomiting (Jatoi et al., 2007).

Ginger root has shown a high antioxidant activity (Mo et al., 2006; Stoilova et al., 2007). Its roots and its extracts have polyphenol compounds (6-gingerol, gingerol, gingerdiol, gingerdione) and other compounds which could be responsible for antioxidant activities of ginger (Chen et al., 1986; Kikuzaki and Nakatani, 1996). It is reported that ginger shows antibacterial properties against many microorganisms.

Lypolipidemic property of this spice is also stated by many authors (Fuhrman et al., 2000; Bhandari, 2005; Nammi et al., 2008).

Lime (*C. aurantifolia*) is a fruit belonging to citrus sp. In Iran whole fruit is dried completely till the color turns to brown. The whole fruit as such or its powder is used for
food seasoning. Traditionally *Citrus aurantifolia* is used against menstrual disorder, diarrhea and dysentery. It has been reported that lime lowers cholesterol level of the blood and can cure ulcer (Okwu and Emenike, 2006).

Many researchers (Onyeagba et al., 2004; Camacho Corona et al., 2008; Chanthaphon et al., 2008) demonstrated antibacterial activity of lime against different bacteria. Whole lime may have high antioxidant activity since, researchers showed a high activity in lime fruit peel and also in albedo (the white spongy portion) (Manach et al., 2004; Ubando-Rivera et al., 2005).

Shallot (*Allium ascalonicum*) belongs to Allium family. It is a major component of many Asian diets and is believed to be beneficial to health. In Iran it is mostly used in dry form. Organosulfur compounds are the main constituents of allium vegetables which are present in all allium vegetables and flavonoids are abundantly present in onion. Thus, it can be considered that the medicinal properties of the allium families may be due to the presence of these chemical groups which would be of great importance in relation to cancer (Sengupta et al., 2004). Analysis of shallot extracts has confirmed the existence of flavone and polyphenolic derivatives for instance quercetin, quercetin 4′-glucoside, quercetin 7,4′-diglucoside, quercetin 3,4′-diglucoside, and quercetin mono-D-glucose, suggesting that it also may have antioxidant properties (Kiviranta et al., 1988; Leighton et al., 1992a; Fattorusso et al., 2002). Antifungal effect and antibacterial properties have been demonstrated by different authors (Azu and Onyeagba, 2007; Mahmoudabadi and Nasery, 2009).