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## Role of Aromatic Plants on Traditional and Complementary Alternative Medicine Practices

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### Editorial

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Plants are essential for human since from the beginning. Plants and their extracts are mainly used medicinal purposes both for the prevention and treatment of human diseases in many countries. Recently, studies are conducted to demonstrate the importance of natural antioxidants in human health. The purpose of these studies is 1) to identify the important plants and extract from them 2) to demonstrate the effect of these extract on human and environmental health <sup>[1]</sup>. Synthetic products are produced to meet the needs of increasing world population for food and medicine. However, serious health and environmental problems are increased by using these synthetic products. One of the most important problems in the world is to provide enough safe food for people. Antioxidant addition is necessary in order to preserve the flavor, color and vitamin content of the food. Some of these sources are containing natural antioxidants (such as spices), however, industries are extensively added synthetic antioxidants to the processed foods. Butylated hydroxy anisole and butylated hydroxy toluene, tertiary butyl hydroquinone, gallates, nordihydroguareyetik acid are examples of synthetic antioxidants. Nowadays, especially in developed countries, public awareness shifted to human-environmental health and natural product resulted to safe food production and alternative to synthetic antioxidant products <sup>[2]</sup>. Level of health displays economic development of the society. The cheapest way to resolve this problem is that conducting research on plants that have high antioxidant compound. Consumers should be informed about the research results on chronic diseases and encouraged to consume foods that have high antioxidant properties.

#### Antioxidant effect of plants in oxidative stress

Most Agents that are used in cosmetic, food, chemical and pharmaceutical industries are obtained from medicinal and aromatic plants. Since the smell of these plants is all natural they are extremely valuable raw materials. When consumption of natural products increased consumption of plants with medicinal properties increased accordingly. Previously, these plants were collected from nature; however, with increasing demand for these plants is rapidly directed cultivation of such plants. The compounds called flavonoids and phenolic that are accumulated the most in leaves, flowers and woody portion of plants are capable to avoid oxidation of lipids, carbohydrates and proteins by giving away hydrogen on their hydroxyl group in their aromatic ring. Consequently, the use of ecological and natural products that inhibit oxidation of biomolecules in living organism became more preferable in human diet <sup>[3,4]</sup>. Antioxidants are able to retard or inhibit oxidative degradation of the compound. These compounds are effective to beginning of otooxidative and otooxdative process to prevent formation of undesirable products to form <sup>[3]</sup>.

#### Antioxidant effect of aromatic plants in oxidative stress

Reactive oxygen species are produced metabolic and physiological processes where these biomolecules have highly damaging effects. Organisms may cause harmful oxidative reactions during vital activities and the removal of these oxidative products is accomplished through enzymatic and non-enzymatic antioxidant mechanisms. An increase in oxygen production and decrease

on antioxidants cannot be prevented in certain situation. Result of oxidative stress causes mainly cancer, cardiovascular disease, cataracts, arthritis and many neurodegenerative disorders [4,5]. Antioxidants could prevent the onset of these harmful reactions or could stop them. Natural products with high antioxidant properties contain pharmacologically effective flavonoid groups (flavones, flavanols, flavanones), various phenolic and aromatic compounds. Many plants including such components are consumed as natural protective agents due to potential antioxidant activities [1,6]. The results of researches on natural products used for antioxidant therapy are showed that this activity intensively due to phenolic components. Phenolic compounds are aromatic compounds containing more than one hydroxyl groups that are glycosylated or methylated. It is estimated that plants have around 8,000 different phenolic compounds. Phenolic compounds can be divided in sub-classes according to the molecular structure. The largest group is the flavonoids with 5,000 members. Plants could exhibit very strong antioxidant activity due to number of bioflavonoids compounds. Antioxidants have capability to stabilize cell wall by preserving lipids and also prevent oxidation and collapse of vitamin C and other compounds [7]. Pure oil extracts from plants are highly resistant to autoxidation despite their high linoleic acid content. This resistance to oxidation is dependent on phenolic and polyphenolic antioxidants that are naturally present in their compositions. Many plant extracts have shown varying degrees of antioxidative activity in fat and food includes fat. Some of the spices and herbs are also known for their antioxidant properties. For example, development of rancidity is delayed in oils by red pepper, cinnamon leaves, cloves, turmeric, nutmeg, dried ginger, rosemary and sage. Antioxidant effect of herbs and extracts of various herbs depends on the presence of phenolics compounds such as carnosol, rosmanol, rosmarinic acid and carnosic acid. Besides the antioxidant capacity of these extracts, synergistic effect is observed when they are used in conjunction with primary antioxidants [2]. Both herbs and herbal extracts are used for medical purposes to treat and prevent human diseases since ancient times in many countries. Today, especially in developed countries, safe food production has become more important due to the awareness of the society towards the use of natural products with focus on human and environmental health. Fitobiotics are plant base compound obtained by extraction from photogenic (aromatic) plants. The most important features of these plant species are showing aromatic effect. Therefore, they are named as aromatic plants [6]. The term aromatic a plant is used for plants producing various extract to multiply, continue to live and protect them. These extracts are obtained from plants by various methods such as steam distillation or extraction of sap. These herbal extracts are called aromatic oils, volatile oils, essential oils, etheric oils or vegetable sap oil. Many aromatic plant seeds, fruits, leaves or roots contain different active chemical component that are used various area because of their different action mechanisms. Also, the rate of active substances of the aromatic plants exhibits changes depending on where the plant source or part. Researchers emphasize that with various combination of these active compound may exhibit synergistic effect. Based on this information; aromatic herbs, essential oils derived from these and the active components of them should be examined for antiviral, antimicrobial and antioxidant capacities. Comparison of these properties and the issue of how they should be utilized have gained importance. The most important feature of the vast majority of aromatic herbs and extracts are showing antioxidant activity. Oxygen is one of the indispensable element for human life, however, it can be damaging for some substances formed during metabolic processes. These compounds, known as reactive oxygen species can be named superoxide radicals, hydrogen peroxide, hydroxyl radical, peroxy radical, perhydroxyl radical, perhydroxyl radical.

Antioxidant, medicinal plants effective as a therapeutic agent and use of herbal extract have reached attractive levels of attention all over the world. Natural herbal products which show antioxidative and anti-inflammatory effects are the sources of both alternative and modern medicine because of their content of polyphenols and flavonoids that have pharmacological effects to help increase the capacity of cells to neutralize oxidative stress. Lately, use of natural products to treat and cure diseases has rapidly been increasing since they are considered to have antioxidant, antimicrobial and anti-inflammatory effects. Accordingly, various speculations on natural products can occur and lead to misleading information. Therefore, it is extremely important to get attention of researchers in this issue for clarification in this area.

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