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## NUTRITIONAL VALUE OF *SPINACIA OLERAECEA* SPINACH-AN OVERVIEW

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**ABSTRACT:** This study has been overviewed to observe the nutritional effect of (*Spinacia oleracea*) on human health by consuming it in to various form as raw or cooked because of its antioxidant compound, dietary fiber, minerals vitamins, and iron compound prevents ones health from various diseases anaemia, and also it contains many anticancer agents. It also contains omega 3 fatty acids and anti-inflammatory agent. It is concluded that eating fresh green vegetables prevents many diseases, which results in good health.

**Keywords:** Fresh, Cooked, Vitamin K, Antioxidant, Anticancer, Health

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**INTRODUCTION:** Spinach (*Spinacia oleracea*) has been widely grown throughout Pakistan. There are so many seasonal vegetables produced from them spinach is one of the most important and nutritious vegetables eaten raw or cooked it provides a very good amount of vitamins B<sub>6</sub>, riboflavin, folate, niacin, soluble dietary fiber, omega 3-fatty acid and minerals. Spinach is also rich with iron; its use prevents some of the diseases like osteoporosis, anaemia results of iron deficiency<sup>6</sup>. In adding to its food value, spinach has numeral therapeutic uses. S Use of spinach for a gastrointestinal disorder, blood-generating therapy, growth stimulation in children, appetite stimulation, convalescent support, and fatigue. It has been also suggested its use as an anticancer agent, antioxidant<sup>6</sup>, and cancer preventative.

Spinach may also reduce age-related eyesight worsening from macular deterioration and cataract. In which may also interact<sup>1</sup> with anticancer herbs and supplements<sup>7</sup>. Spinach cultivation in Pakistan has more consideration nowadays, consuming 200gm of spinach gives 41 calories it also an excellent source of vitamin K, flavonoids, carotenes, vitamin C, folic acid compounds in spinach prevents from development of cancer cells, it has been further observed that flavonoids compounds in spinach functions as an antioxidant agent which act in body anticancer agent. Functional and health qualities of spinach<sup>7</sup> and its technological advances in formulation<sup>3</sup> or preserving the fresh vegetables is under consideration for health benefits. Spinach is also composed of various active compounds such as flavonoids, and other polyphenolic active ingredient compounds are acting in combination with one another as anti-inflammatory agents and antioxidant agent.

**Vitamin K in Spinach:** Spinach contains vitamin K is a group of compounds. The most important of these compounds appears to be vitamin K<sub>1</sub> and

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vitamin K<sub>2</sub>. Vitamin K<sub>1</sub> is obtained from leafy greens and also from spinach vegetables.

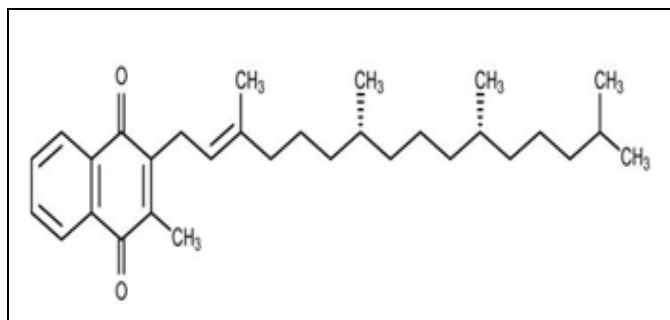


FIG. 1: CHEMICAL STRUCTURE OF VITAMIN K IN SPINACH

**Antioxidant Agents in Spinach:** Flavonoids, carotenoids, vitamins (C, E) and phenolic compounds have antioxidative action when spinach is consumed these all components together controls the effect of free radical Fig. 2 to reduce their harmful effect. All compounds have antioxidant effect<sup>2</sup>.

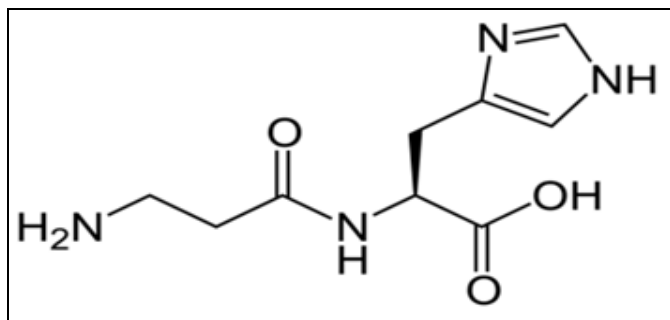


FIG. 2: CHEMICAL STRUCTURE OF ANTIOXIDANT EFFECTS IN SPINACH

**MATERIALS AND METHODS:** Processing of freshly harvested Spinach is under.

**Selection of Spinach:** Spinach can be harvested when it leaves fully mature they are picked by hand or by scissor properly collect with careful handling.

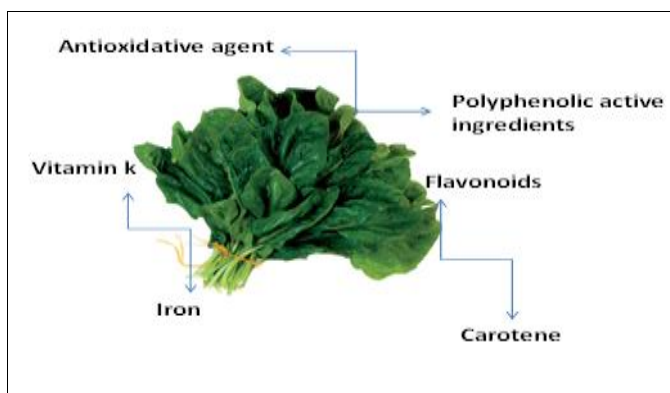


FIG. 3: A SCHEMATIC DIAGRAM OF SPINACH WITH NUTRIENTS

**Wash with Clean Water:** After collection, the spinach leaves should be washed with clean water to remove the dust dirt, or other impurities repeat this process for two or three times to achieve impurities free spinach leaves.

**Homogenous Cutting:** Take stainless steel knife for cutting the spinach, cutting should be done homogenously.

**Cooking:** Spinach for cooking should be placed in a pot put all the cut spinach into the pan on medium heat after a few minutes it releases water. Another method is to boil the water and add spinach leaves into boiled water for a few minutes, discard the water from spinach cook as desired Fig. 4. Show the flow process of spinach as raw to eat.



FIG. 4: FLOW PROCESSING CHART OF SPINACH

**Spinach Leaves Drying:** Above mentioned method is applied for drying of spinach to use in the off season when this crop is not available it can be stored for a long time by drying<sup>4</sup>. After washing of spinach, it can be spread in direct sunlight to remove the moisture content, after two days direct exposure to the sun it can be collected and paced into polyethylene bags tightly store at safe and hygiene place for use<sup>3</sup>.

**RESULTS AND DISCUSSION:** It is concluded from the overview that the use of spinach in our daily life has great importance to prevent the health from many diseases its antioxidative effect has active compounds and are highly available to the

body, a powerful natural antioxidant mixture has been identified from spinach leaves with its main active compounds, these compounds are heat stable and non toxic when eaten its dietary invention is important inhuman. All compounds have an antioxidant effect in body <sup>2</sup>.

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**CONFLICT OF INTEREST:** Nil

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