

## Protecting Physicochemical Properties of Black Cumin Seed (*Nigella sativa*) Oil and Developing Value Added Products

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**Abstract :** In the study, a traditional herbal supplement black cumin seed (*Nigella sativa*) oil properties has been studied to protect the main quality parameters by a new supplement application. Black cumin seed and its oil is used as a dietary supplement and preferred traditional remedy in Africa, Asia and Middle East for centuries. Now it has been consuming by millions of people in America and Europe as natural supplements and/or phytotherapeutic agents to support immune system, asthma, allergic rinitis etc. by the scientists' advices. With the study, it is aimed to prove that soft gelatin capsules are a new and more practical way of usage for *Nigella sativa* oil that has a longer stability. With the study soft gelatin capsules formulation has been developed to protect cold pressed black cumin seed oil physicochemical properties for a longer period. The product design has been developed in laboratory and implemented in pilot scale soft gelatin capsule manufacturing. Physicochemical properties (peroxide value, free fatty acids, fatty acid composition, refractive index, iodine value, saponification value, unsaponifiable matters) of *Nigella sativa* oil soft gelatin capsules and *Nigella sativa* oil in liquid form in amber glass bottles have been compared and followed for 8 months. The main parameters for capsules and liquid form found that for free fatty acids  $2.29 \pm 0.03$ ,  $3.92 \pm 0.11$  % oleic acid, peroxide  $23.11 \pm 1.18$ ,  $27.85 \pm 2.50$  meqO<sub>2</sub>/kg, refractive index at 20 °C  $1.4738 \pm 0.00$ ,  $1.4737 \pm 0.00$ , soap 0 ppm, moisture and volatility  $0.32 \pm 0.01$ ,  $0.36 \pm 0.01$  %, iodine value  $123.00 \pm 0.00$ ,  $122.00 \pm 0.00$  w/w, saponification value  $196.25 \pm 0.46$ ,  $194.13 \pm 0.35$  mg KOH/g and unsaponifiable matter  $7.72 \pm 0.13$ ,  $6.88 \pm 0.36$  g/kg respectively. The main fatty acids are found that linoleic acid 56.17%, oleic acid 24.64%, palmitic acid 11,94 %. As a result, it is found that cold pressed *Nigella sativa* oil soft gelatin capsules physicochemical properties are more stable than the *Nigella sativa* oil stored in glass bottles.

**Keywords :** black cumin seed (*Nigella sativa*) oil, cold press, nutritional supplements, soft gelatin capsule

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