

## Effects of Spirulina Platensis Powder on Nutrition Value, Sensory and Physical Properties of Four Different Food Products

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**Abstract :** Spirulina platensis is a blue-green microalga with unique nutrient content and has many nutritional and therapeutic effects that are used to enrich various foods. The purpose of this research was to investigate the effect of Spirulina platensis microalgae on the nutritional value and sensory and physical properties of four different cereal-based products. For this purpose, spirulina microalgae dry powder with amounts of 0.25, 0.5, 0.75, and 1 is added to the formula of pasta, bulk bread, layered sweets, and cupcakes. A sample without microalgae powder of each product is also considered as a control. The results showed that adding Spirulina powder to the formulation of selected foods significantly changed the nutrition value and sensory and physical characteristics. Comparison to control protein increased in the samples containing spirulina powder. The increase in protein was about 1, 0.6, 1.2 and 1.1 percent in bread, cake, layered sweets and Pasta, respectively. The iron content of samples, including Spirulina, also increased. The increase was 0.6, 2, 5 and 18 percent in bread, cake, layered sweets and Pasta respectively. Sensory evaluation analysis showed that all products had an acceptable acceptance score. The instrumental analysis of L\*, a\*, and b\* color indices showed that the increase of spirulina caused green color in the treatments, and this color change is more significant in the bread and pasta samples. The results of texture analysis showed that adding spirulina to selected food products reduces the hardness of the samples. No significant differences were observed in fat content in samples, including spirulina samples and control. However, fatty acid content and a trace amount of EPA found in samples included 1% spirulina. Added spirulina powder to food ingredients also changed the amino acid profile, especially essential amino acids. An increase of histidine, isoleucine, leucine, tryptophan, and valine in samples, including Spirulina was observed.

**Keywords :** spirulina, nutrition, Alge, iron, food

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