



Natural products application: Health, Cosmetic and Food

Provided by nature, adapted scientifically for industry



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**CHEMICAL PROFILE AND BIOACTIVE PROPERTIES OF GREEN- AND RED-COLORED BASIL
CULTIVARS AS AFFECTED BY NITROGEN FERTILIZATION**

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Basil (*Ocimum basilicum* L.) is an aromatic herb of the Lamiaceae family which has a high commercial value for having multiple purposes such as medicinal, nutrition, ornamental, cosmetics, religious and insecticidal or insect repellent purposes. It is a species with high genetic variability and numerous cultivars that do not differ significantly in morphological terms but present differences from the chemical composition point of view. In the present work, the chemical composition and bioactive properties of green and red-coloured cultivars were evaluated in relation to nitrogen fertilizer application rate. Three red-coloured (Dark Opal, Basilico Rosso and Red Basil) and one green-coloured landrace (Mitikas) of basil were grown under four nitrogen regimes, namely Control (no fertilizer added), 200 ppm, 400 ppm and 600 ppm of nitrogen (N). Fresh yield varied depending on N input following a quadratic function in all four genotypes, and green basil performed better compared to the red cultivars. A significant interaction of genotype × N input was recorded for most of the chemical parameters measured. Tocopherols contents of leaves were consistently higher in plants that received 200 ppm of N and lower in those receiving 600 ppm of N, especially in Dark Opal and Red Basil cultivars. Polyunsaturated fatty acids (PUFA) were the major category of fatty acids and Red basil had the lowest ratio of omega-6/omega 3 (0.29) and thus the best fatty acid profile. Polyphenols content was the highest in Red Basil and Dark Opal (25 mg/g of extract on average) and the lowest in Mitikas and decreased with increasing N input. Similarly, antioxidant activity was the highest in Dark Opal and Red basil fertigated with 200 ppm of N. In conclusion, basil chemical and bioactive profile was significantly influenced by both genotype and N input. Red-coloured basil although less productive had the best chemical profile, and moderate levels of N input may provide the best compromise between yield, nutritional value and bioactivity for the species.

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