EuroSciCon

4th Edition of International Conference on

Agriculture & Food Chemistry

July 08-09, 2019
Vienna, Austria

Changes on antioxidant profiles and physicochemical characteristics in growing wild calafate berry (*Berberis microphylla G. Forst*) in response to abiotic stress.

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Calafate *(Berberis microphylla G. Forst)* is a Chilean berry that grows under wild conditions, mainly in Patagonia, presenting a flavor and blue colored fruits attributed to vitamins and polyphenols contents. Calafate berry produce 18 anthocyanins derived from glycosylated delphinidin, petunidin, malvidin, peonidin and cyanidine, which provide beneficial effects on human health. These compounds are biosynthesized by the plant through secondary metabolism under stress conditions. As consequence of location of the study, high sunlight exposure and cold, the synthesis of phenolic compounds in these plants can be stimulated. Therefore, this research aimed to evaluate physicochemical characterization and antioxidant activity and phenolic content of calafate berries and to correlate with the abiotic stimulus from three continuous years (2017, 2018, 2019). Calafate berries were collected from Aysen region (south of Chile) at the end of February (2017, 2018 and 2019) and kept -80°C before the analyses. Measurements of physical and chemical parameters as weight, diameters, pH, soluble solids, acidity, total polyphenols, total anthocyanins and antioxidant capacity, were correlated to UV radiation and temperature. Comparison between HPLC-DAD and CIELAB analyses were carried out in order to determine degradation or increasing in calafate anthocyanins Radiation exposure had a slight influence on parameters, such as size and weight. Physicochemical aspects, such as pH, soluble solids, color and anthocyanin contents were correlated with temperature changes by year. In response to environmental limitations as UV radiation and low temperatures, the calafate display structural and physiological plasticity that allows it to adapt to different temperatures caused by the diurnal and seasonal rhythms associated with anthocyanin contents growing wild.

Biography

Maria Eugenia Romero is a PhD student in Agronomic Science from University of Concepcion – Chile. She has completed her Master in Molecular Biotechnology by University of Guayaquil – Ecuador. She has worked as Deputy head of department of Biotechonology in Litoral Sur experimental station at National Institute of Agricultural Research of Ecuador and as research assistant in University of Babahoyo – Ecuador. Currently she is working with calafate, analizing it a source of functional ingredients by determining bioactive compounds, testing isolated or mixed metabolites to assay some formulations in vitro and in vivo, in order to propose those metabolites extracted from calafate as food supplement.

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