F.38. RIPENING-DEPENDENT CHANGES IN KEY BIOACTIVE COMPOUNDS OF SOME SEA BUCKTHORN CULTIVARS IMPLICATIONS FOR HARVEST OPTIMIZATION

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Abstract. Sea buckthorn is a sun-loving species prized for its nutrient-dense orange berries, which are extensively utilized in the pharmaceutical, food, and agricultural sectors. This study investigated four cultivars—Dora, Cora, Mara, and Clara—cultivated in the Republic of Moldova over a 60-day period (August to September), with a focus on the evolution of key ripening indicators: vitamin C, total carotenoids, and organic acids.
Ascorbic acid, a crucial bioactive compound, declined steadily as the fruits matured. The Clara, Dora, and Mara cultivars showed an approximately 2.5-fold reduction in concentration, whereas the Cora cultivar exhibited a more pronounced, nearly fourfold decrease, indicating notable genetic differences in nutrient retention. Carotenoid accumulation, responsible for the berries' antioxidant properties, displayed cultivar-specific patterns: Clara, Dora, and Mara reached peak levels in late August, followed by a decline due to overripening, while the Cora cultivar showed a continuous increase, reaching its maximum at the end of the study period.

Malic acid was identified as the predominant organic acid. In addition to shaping the berries' characteristic tart and astringent flavor, it contributes to stabilizing the antioxidant matrix and enhancing the bioavailability of polyphenols.
Overall, the results highlight that the stage of ripening plays a decisive role in defining the biochemical profile of sea buckthorn. The distinct responses observed among the cultivars suggest that harvest timing should be carefully tailored to the intended industrial purpose, whether to maximize vitamin C content or to optimize carotenoid extraction.

Keywords: bioactive compounds, biochemical profiles, total carotenoids, vitamin C.

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