F.6. VALORIZATION OF ALFALFA FOR INNOVATIVE FOOD INDUSTRY APPLICATIONS

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Abstract. Alfalfa *(Medicago sativa L.)* is known for its rich composition of pigments, especially chlorophylls, which give the leaves their intense green hue. In this work, the chlorophyll content and color parameters of alfalfa, the Dimitra variety, harvested in the Republic of Moldova were analyzed. In the alfalfa sample, the total chlorophyll content was approximately 1768 mg/100 g

DW, with the predominance of α chlorophyll (1315 mg/100 g DW) over β chlorophyll (452.8 mg/100 g DW). These values are within the limits reported for plants harvested in the budding phase, when the leaves are metabolically active and rich in pigments. The CIELab color parameters of alfalfa highlight a chromatic profile specific to chlorophyll-rich plant materials. The parameter value L* (30.30) indicates a low brightness, suggesting a relatively dark color, characteristic of leaves with a high content of photosynthetic pigments. The coordinate a* (−21.99) reflects a pronounced shift towards the green area of the spectrum, confirming the predominance of chlorophylls. At the same time, the value b* (19.40) highlights a moderate yellow component, associated with the presence of carotenoids and xanthophylls, pigments that contribute to color stability and overall hue. The ratio −a*/b* (−1.13) suggests a balance between green and yellow tones, with a slight dominance of green. This ratio is relevant for evaluating color changes during processing or storage. The chroma value, C* (29.32) indicates an intense and saturated color, which reflects good visual quality. The hue angle, h*, (138.60 °) falls within the green color range, confirming the predominantly green character of alfalfa, with a slight tendency towards yellowish-green.

The chromatic profile highlighted by CIELab parameters confirms that alfalfa presents an intense, stable and well-defined green color, associated with a high content of natural pigments and bioactive compounds. These characteristics support the potential of alfalfa not only as a functional ingredient, rich in protein, but also as a natural coloring agent in the food industry. Its integration into food products can contribute both to improving the nutritional value and to obtaining attractive visual properties, responding to current demands for natural and sustainable ingredients.

Keywords: alfalfa, bioactive compounds, protein concentrate, functional proprieties.

Acknowledgments: National Project Stimulating Excellence in Research of National Agency for Research and Development of Moldova 25.80012.5107.21SE “Optimization of the extraction technology of protein concentrates from alfalfa (*Medicago sativa* L.) for the manufacture of new food products”.