MOLECULAR TOOLS FOR THE PROTECTION OF AGROBIODIVERSITY AND PROMOTION OF SUSTAINABLE AGRICULTURE

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The protection and conservation of grain agrobiodiversity represent milestones in modern and sustainable agriculture and food waste reduction. Molecular tools play a vital role in understanding grain traits, although their integration into agricultural practices remains limited. Our study, part of the CROPDIVA project, focuses on developing biochemical methods to assess grain quality and select high-performing varieties for different applications. Our research aimed at establishing a high-throughput screening pipeline for CROPDIVA varieties, enhancing agricultural diversity and promoting new supply chains. Diversified agricultural products contribute to soil enrichment and dietary improvement.
We conducted comprehensive bromatological and phytochemical characterizations of CROPDIVA samples, evaluating protein, lipid, humidity and fiber content, enzymatic starch assays, and bioactive and nutritional features such as total polyphenols, anti-nutritional factors, and total antioxidant capacity. Furtherly, selected CROPDIVA grain varieties were evaluated by adopting an *in vitro* digestion models to assess dry matter and protein digestibility, and nutrient bioavailability of selected nutrient compound.
In conclusion, integrating minor crops into feed enhances agricultural sustainability, benefits human nutrition, and supports ecosystem resilience. Our findings underscore the importance of agrobiodiversity in fostering resilient agricultural systems that meet global food security challenges.

Keywords: grain quality, seeds composition, molecular characterization, nutritional evaluation, agrobiodiversity

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