APPLICATION OF THE NIR SPECTROSCOPY FOR BIOCHEMICAL SCREENING OF CHICKPEA SEEDS (*CICER ARIETINUM* L.) FROM THE VIR COLLECTION

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Rapid assessment of the chemical composition of seeds and their nutritional value requires new, modern methods for evaluating the source and seed material. One promising approach is a physical method based on near-infrared spectroscopy (NIR spectroscopy). Preliminary construction of calibration models based on chemical analysis data is one of the conditions for using these analytical instruments. The object of the study was 28 samples of chickpea (*Cicer arietinum* L.) seeds with different colors from the collection of the Vavilov All-Russian Institute of Plant Genetic Resources. Protein was determined using the Kjeldahl method, starch – by the polarimetric method according to Evers. Calculation and processing of calibration models were performed using the OPUS software included with the Bruker MATRIX-I IR analyzer. The reliability of the models was verified on a randomly selected batch of chickpea samples by comparing the results obtained using new calibrations and chemical analysis methods. The high determination coefficient (R^2) for the «Chickpea Protein» (84.8%) and "Chickpea Starch" (75.4%) models provides confidence in the reliability of the obtained results. The difference between standard chemical methods and spectral readings was found to average 0.77% for starch and 0.64% for protein. The relative difference between the studied parameters does not exceed 3%. The resulting protein and starch models enable rapid, high-precision mass analysis of chickpea seeds and determine the optimal use of individual samples.

Keywords: chickpeas, calibration model, protein, starch