

**ISOLATION, CHARACTERIZATION AND APPLICATION OF ACETIC ACID BACTERIA
FROM LOCAL WINE PRODUCTS****Boistean A.¹, Chirsanova A.¹, Sturza R.¹, Gaina B.²***1-Technical University of Moldova, Republic of Moldova**2-Academy of Sciences of Moldova, Republic of Moldova*

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Recently, interest has increased in the problem of nutrition and the production of natural products in the Republic of Moldova, including fermented products, the production of which requires local and active acetic acid bacteria (AAB). Agriculture and specifically wine are a business card of our country, internationally recognized. But AAB can play not only a negative role, but also a positive one for the processing of agricultural crops. The main goal of this work was to isolate a pure culture of AAB from local wine products for further use in production of DOP or IGP products.

AAB are a group of Gram-negative bacteria which oxidize sugars or ethanol and produce acetic acid during fermentation. They belong to the family *Acetobacteraceae*, which includes several genera and species. Currently, they are classified into nineteen genera. AAB are widespread in nature and play an important role in the production of food and beverages. These bacteria are also used in the production of other metabolic products, for example, gluconic acid, L-sorbose and bacterial cellulose, with potential applications in the food and biomedical industries.

Acetic acid bacteria live in greater or lesser numbers on all agricultural products. But for the study, unprocessed chemically white grapes of the Nova variety (Călărași district) and products of its processing (white wine, white wine with high acidity pH=2.89, wine must fermented to vinegar, laboratory production) and wine vinegar (unfiltered and unpasteurized) were taken for the study. The primary task was to isolate active and high-performance AAB. The isolation of pure cultures of acetic acid bacteria was carried out using conventional methods on three dense differential diagnostic media: GYC (yeast extract -10 g/L, CaCO₃-10 g/L, glucose - 3 g/L, agar - 15 g/L); RAE (glucose - 4g/L, peptone - 1g/L, yeast extract -1g/L, citric acid x H₂O - 0.15g/L, Na₂HPO₄·2H₂O-0.34g/L, glacial acetic acid -1 mL/L, C₂H₅OH 96% - 1 mL/L); Hoyer's ((NH₄)₂SO₄ -1 g/L, K₂HPO₄ -0.1g/L, KH₂PO₄ -0.9 g/L, MgSO₄ -0.25 g/L, C₂H₅OH 96% -30 mL/L, FeCl₃ 1% - 0.5 g/L, H₂O dist.). The media were manufactured and certified at the Institute of Microbiology and Biotechnology of the Academy of Sciences of Moldova. Cultivation, storage and study of bacteria was carried out in the laboratories of the Faculty of Food Technologies, UTM, in a thermostat at a temperature of 27±1 °C for 3-5 days. The identification of isolates was carried out according to morphological, cultural, physiological and biochemical characteristics (gram stain, catalase test, KOH test) taking into account the properties characteristic of AAB. To confirm the belonging to the *Acetobacter* genus of the isolated bacteria, the real-time PCR method was used for detection by comparison of DNA. In our research molecular detection of AAB has been done using For everyone Detection Kit B Acetics Screening “, PIKA Weihenstephan GmbH, which contains all the materials necessary for this determination. The qPCR reaction was performed according to the manufacturer's protocol (#2401-15 4eTM for everyone Detection Kit B Acetics Screening User Guide).

In this study, a new strain of acetic bacteria with valuable biotechnological properties was isolated from native raw materials. Following the performance of biochemical tests and the application of the RT-PCR method, it was definitely established that the isolated strain belonged to the *Acetobacter* genus. The strain *Acetobacter acetii* CNMN-AcB-01 was deposited in the National Collection of Nonpathogenic Microorganisms within the Institute of Microbiology and Biotechnology. Following the testing of the strain *Acetobacter acetii* CNMN-AcB-01 in industrial conditions at the company "V. DEVELOP" SRL, the practical interest of its use in the production of domestic wine vinegar was found.

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