



Mustapha Stambouli University, Mascara

Exact Sciences Faculty

Chemistry Department

1NCMCRE 25 April 16-17,2025 Mascara

### PARTICIPATION CERTIFICATE

The president of the 1st National Conference on Materials Chemistry and Renewable Energy  
(1st NCMCRE 2025) certifies that:

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has presented **a poster** communication entitled:

**OPTIMIZATION OF A SUSTAINABLE CULTURE MEDIUM USING POTATO PEELS  
FOR ECO-FRIENDLY HYALURONIC ACID PRODUCTION**



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## OPTIMIZATION OF A SUSTAINABLE CULTURE MEDIUM USING POTATO PEELS FOR ECO-FRIENDLY HYALURONIC ACID PRODUCTION

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### **Abstract**

Potato peels, an agro-industrial waste, were used to develop an optimized culture medium for hyaluronic acid (HA) production under anaerobic conditions. Their composition provides an economical and sustainable carbon source, supporting microbial growth and HA biosynthesis. The optimization process involved adjusting nitrogen sources, essential vitamins, cofactors, and precursors to enhance production efficiency. Fermentations were conducted in Erlenmeyer flasks under strict anaerobic conditions, with the medium pre-reduced using a nitrogen or carbon dioxide atmosphere and cysteine HCl added to lower the redox potential. Anaerobic conditions were reinforced using gas-generating sachets and sealed incubation systems.

An experimental industrial plan was designed to optimize HA production by evaluating key parameters such as salt tolerance, nutrient availability, and anaerobic stability. Strategies included testing different culture conditions, implementing a fed-batch system to regulate nutrient supply, and monitoring production through viscosity changes and specific staining techniques. The optimized conditions led to a significant increase in HA production, demonstrating the effectiveness of using potato peel waste as a sustainable substrate, contributing to waste valorization and reducing environmental impact.

**Keywords:** Optimization, culture medium, hyaluronic acid, microbial production, environmental sustainability, eco-friendly bio process.