Foods 2024 Conference
The 5th International Electronic Conference on Foods
28–30 October 2024 | Online
MDPI

LAMAABE
مخبر الميكروبيولوجيا التطبيقية للأغذية للبيوطبي وللبيئة
LABORATOIRE DE MICROBIOLOGIE APPLIQUÉE À L'AGROALIMENTAIRE, AU BIOMÉDICAL ET À L'ENVIRONNEMENT

République Algérienne Démocratique et Populaire
Ministère de l'Enseignement Supérieur et de la Recherche Scientifique
Université ABOU BAK BELKAID-TLEMCEN
Institut des Sciences et Techniques Appliquées ISTA
Laboratoire de Microbiologie Appliquée à l'Agroalimentaire au Biomédical et à l'Environnement (LAMAABE)

Effect of environmental factors on biofilm formation by *Pseudomonas aeruginosa* isolated from dairy processing lines

CHERIF ANNTAR Asmaa[*1], BARKA Mohammed Salih[1], BENAMAR Ibrahim[2]

[1] Institute of Applied Sciences and Technology, Abou Bakr Belakid-University of Tlemcen, Algeria
[2] Department of Biology, Faculty of Science, Amar Telidji University, Laghouat, Algeria.

1 Introduction

Biofilms are structured communities of bacterial cells enclosed in a self-produced polymeric matrix and attached to biotic or abiotic surfaces. biofilms is a universal strategy adopted by bacteria to increase their survival chances against harsh environment including physical and chemical antimicrobial treatments.

In dairy industries, *P. aeruginosa*, classified as spoilage bacteria, can colonize different materials and equipment such as tanks, pipes, pumps and contact surfaces. This can pose challenges in terms of controlling microbiological contamination. Indeed, this bacterium can form resistant biofilms, which makes their elimination difficult and promotes their persistence in the industrial environment.

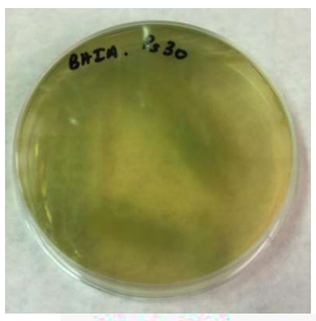
2 Objectives

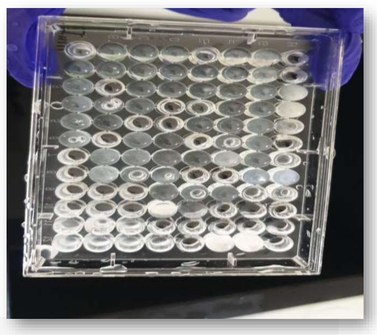
This study focuses on the influence of carbon source, surface type, temperature and contact time on *P.aeruginosa* biofilm formation.

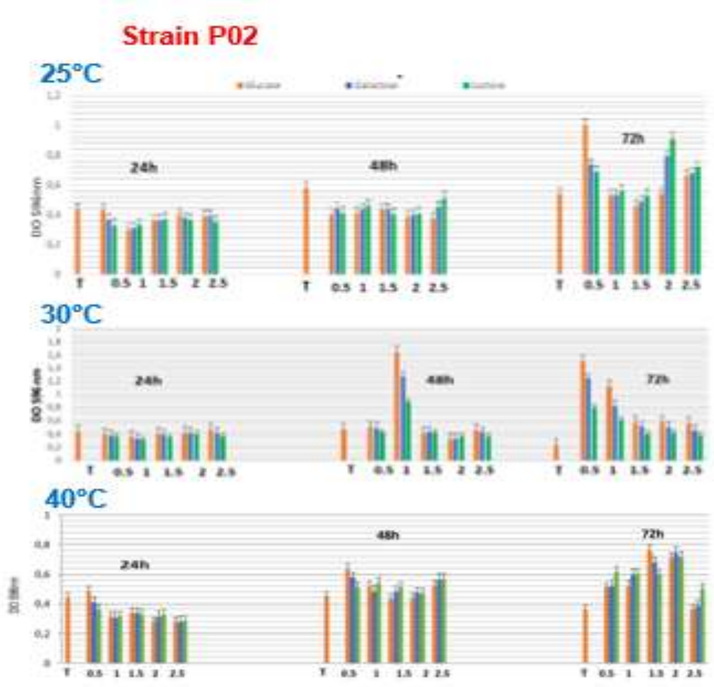
3 Methodology

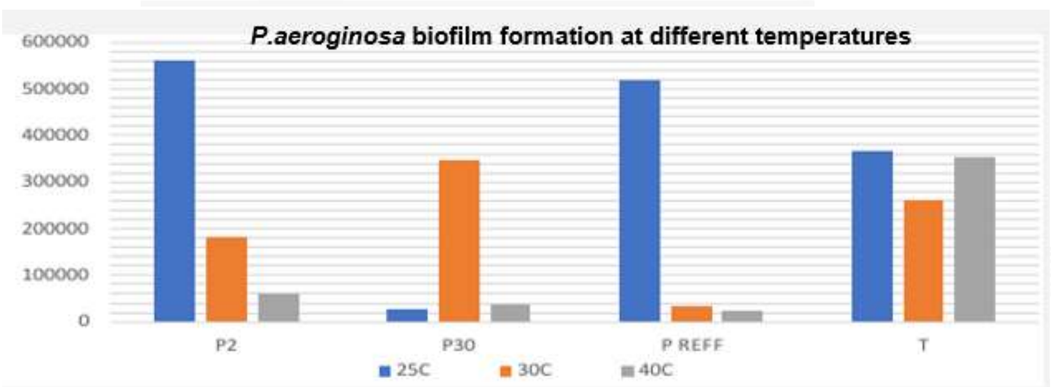
The objective was to evaluate the ability of three strains of *P. aeruginosa* to form biofilms in the presence of different sugars (lactose, glucose and galactose), on different types of surface (PVC and Teflon) at different temperatures (25, 30 and 40°C). The methodology involved incubating strains with various concentrations of sugars (0.5, 1, 1.5, 2, and 2.5%) and assessing biofilm formation at specific time intervals (24, 48 and 72h).

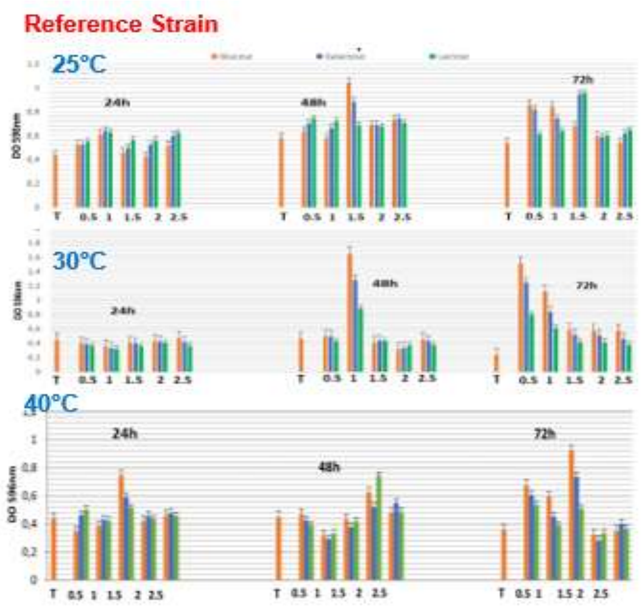
4 Results











5 Conclusion

The values obtained indicate that certain combinations of sugars, temperatures and incubation times particularly favor the formation of biofilms by *P.aeruginosa* strains studied, highlighting the need for rigorous control of these parameters in dairy industries. Understanding these interactions will help to develop control strategies to maintain food quality and safety in such industry.