

# Innovative technologies for the development of functional foods from by-products from various food chains

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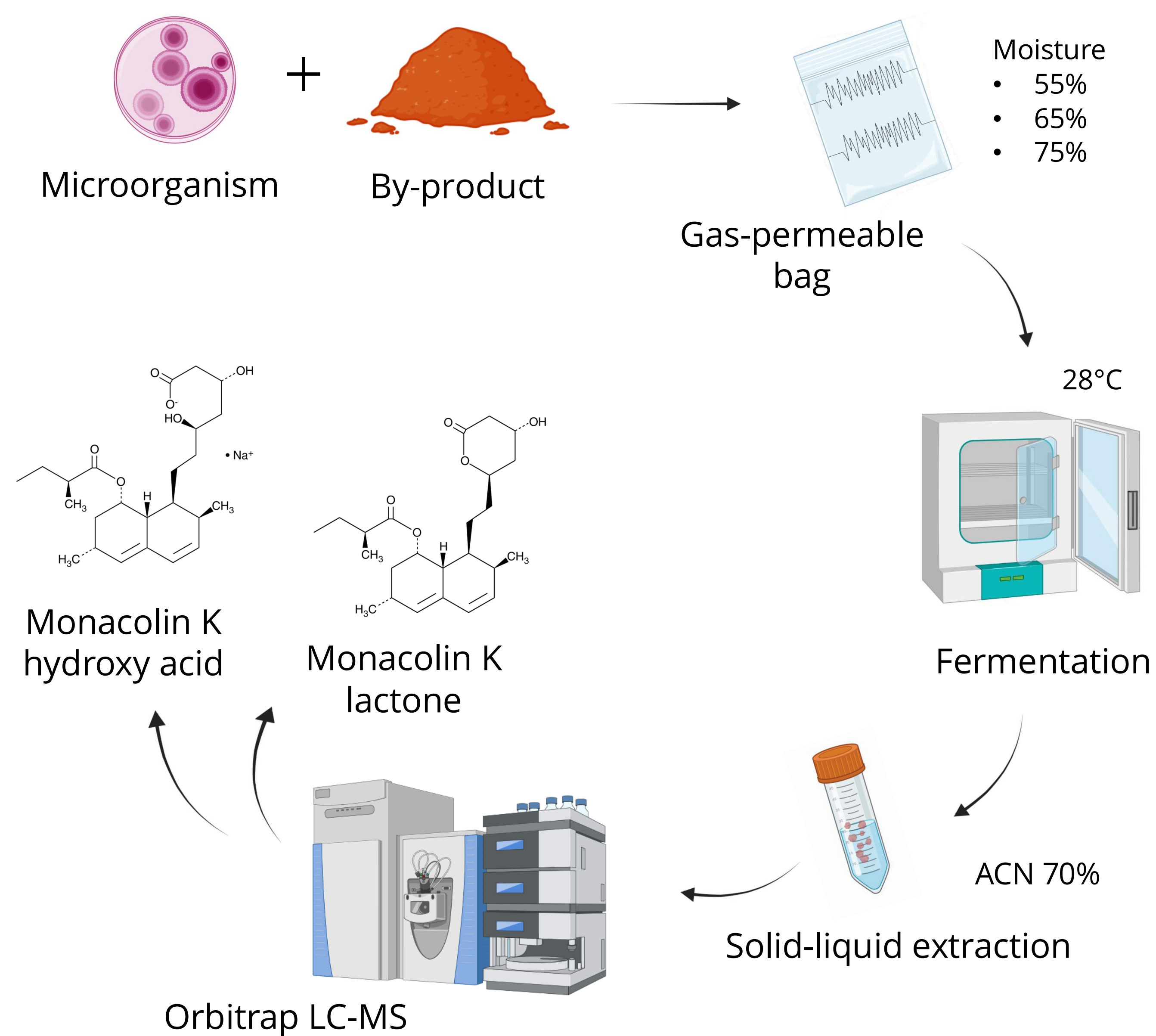
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## Introduction

The agri-food industry produces tonnes of by-products along the supply chain, generating disposal costs and increasing gas emissions. However, by-products such as coffee silverskin (CS) and tomato pomace (TP) could be valorized by Solid-state Fermentation (SsF) producing health-promoting bioactive compounds. Among these, monacolin K, an anti-hypercholesterolemic agent, is widely marketed, usually as a supplement. However, its production often uses unsustainable substrates such as the rice in red yeast rice. Therefore, the study aims to produce monacolin K from CS and TP under SsF using *Aspergillus* and *Monascus* spp.

## Material and methods



## Conclusion

*M. ruber*, *M. purpureus*, and *A. costaricensis* are capable of growing on CS- and TP-based media. Under SsF, *M. ruber* produced monacolin K from TP, with a higher concentration noted at a moisture content of 55%. Peak production occurs on day 18, with a prevalence of the hydroxy acid form. Further environmental parameters need to be optimized to increase production.

## Results

(A1,2)

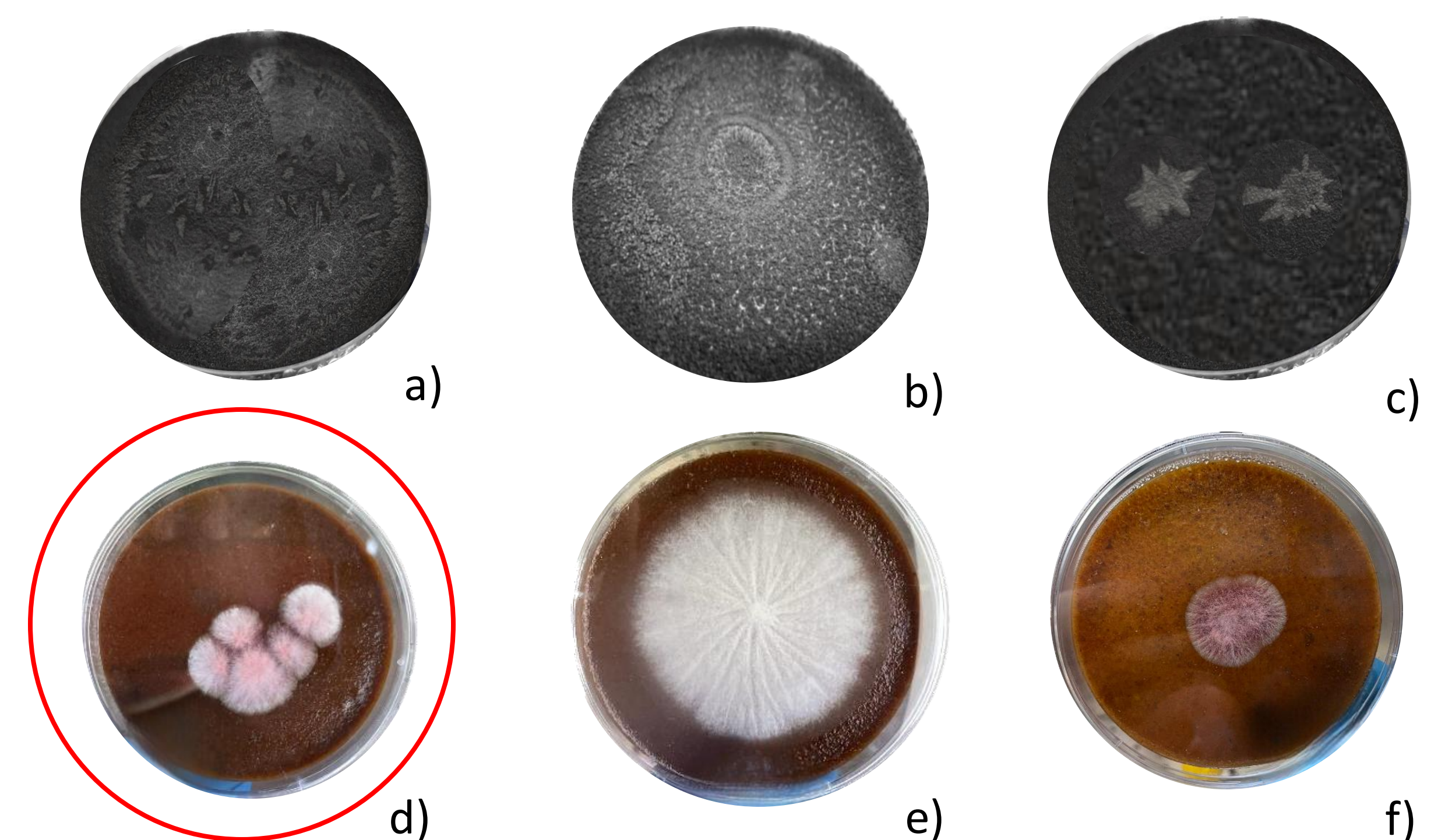


Fig. 1. *M. ruber* (a), *A. costaricensis* (b), *M. purpureus* (c) on CS-based medium and *M. ruber* (d), *A. costaricensis* (e), *M. purpureus* (f) on TP-based medium

(A3)

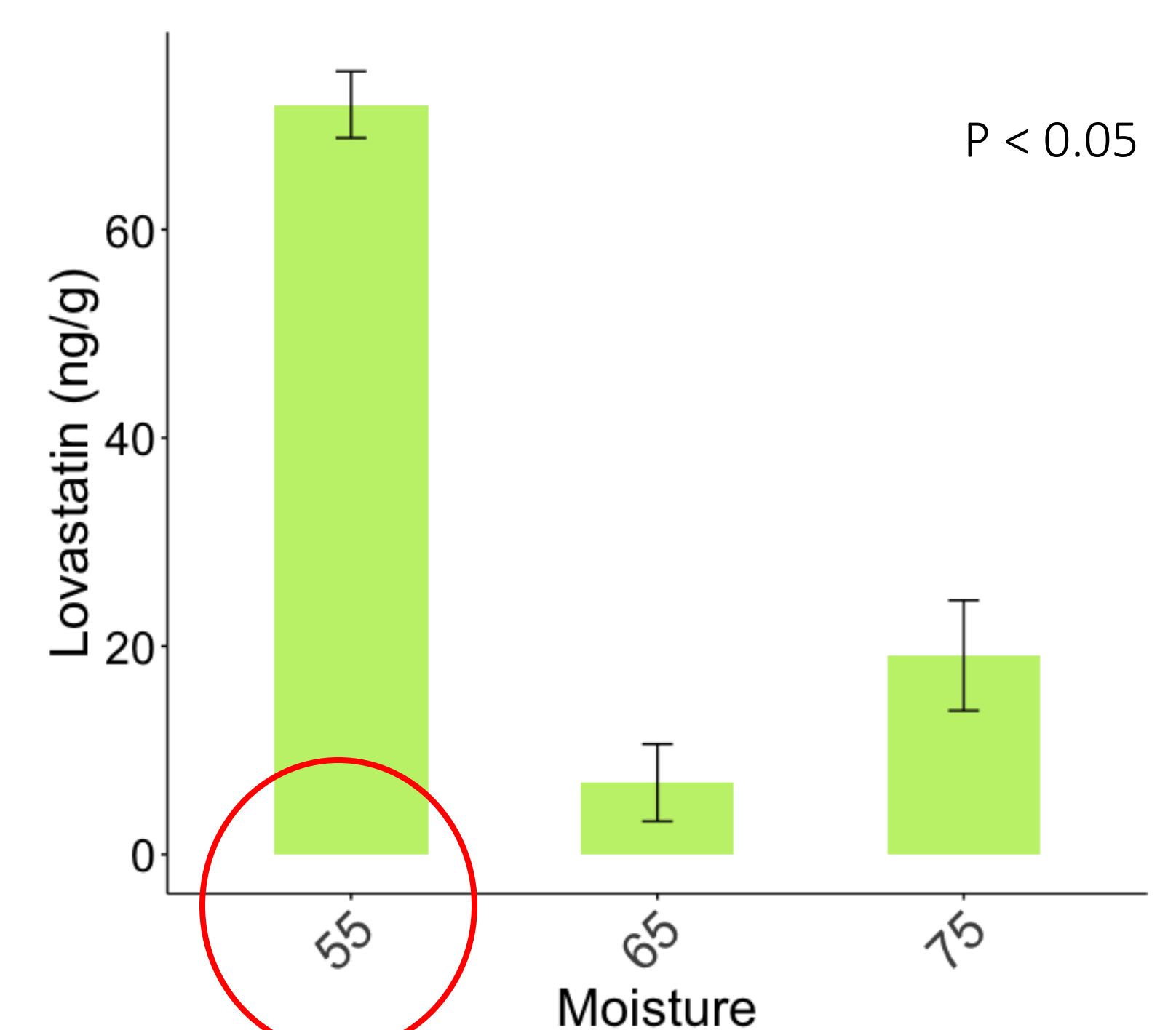


Fig. 2. Production of Monacolin K by *M. ruber* from TP substrate at different moisture percentages

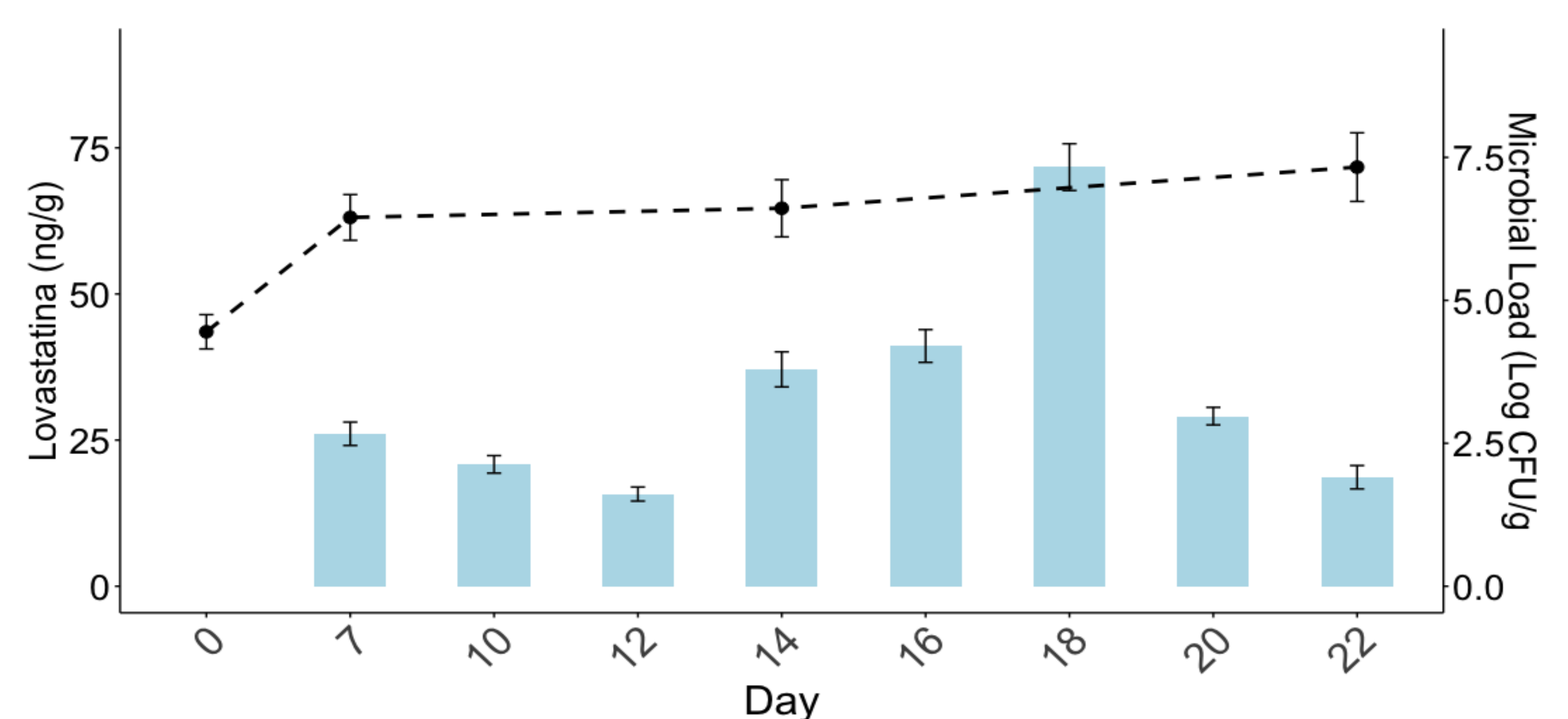


Fig. 3. Production kinetic of monacolin K and microbial load of *M. ruber* in TP at 55% moisture

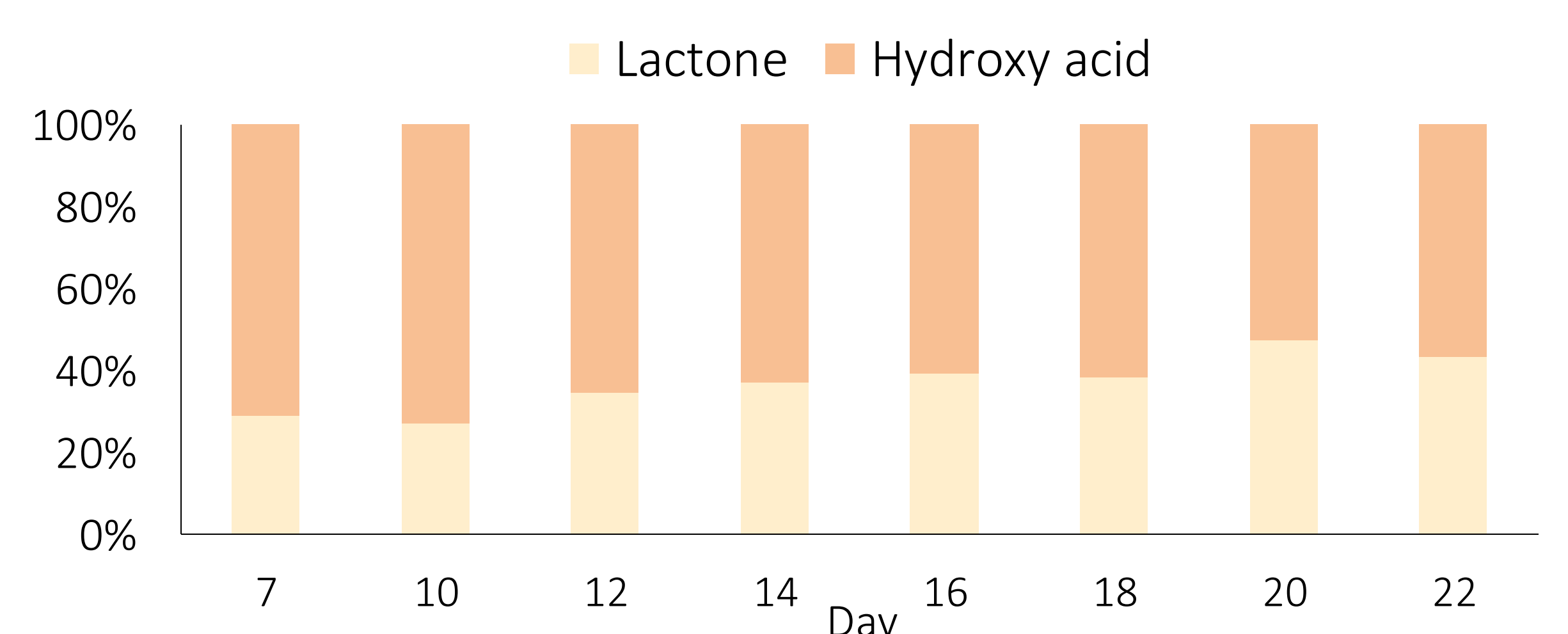


Fig. 4. Percentage of hydroxy acid and lactone forms in TP at 55% moisture at different times