

# Cheese whey valorization by *Trametes versicolor* through submerged cultivation

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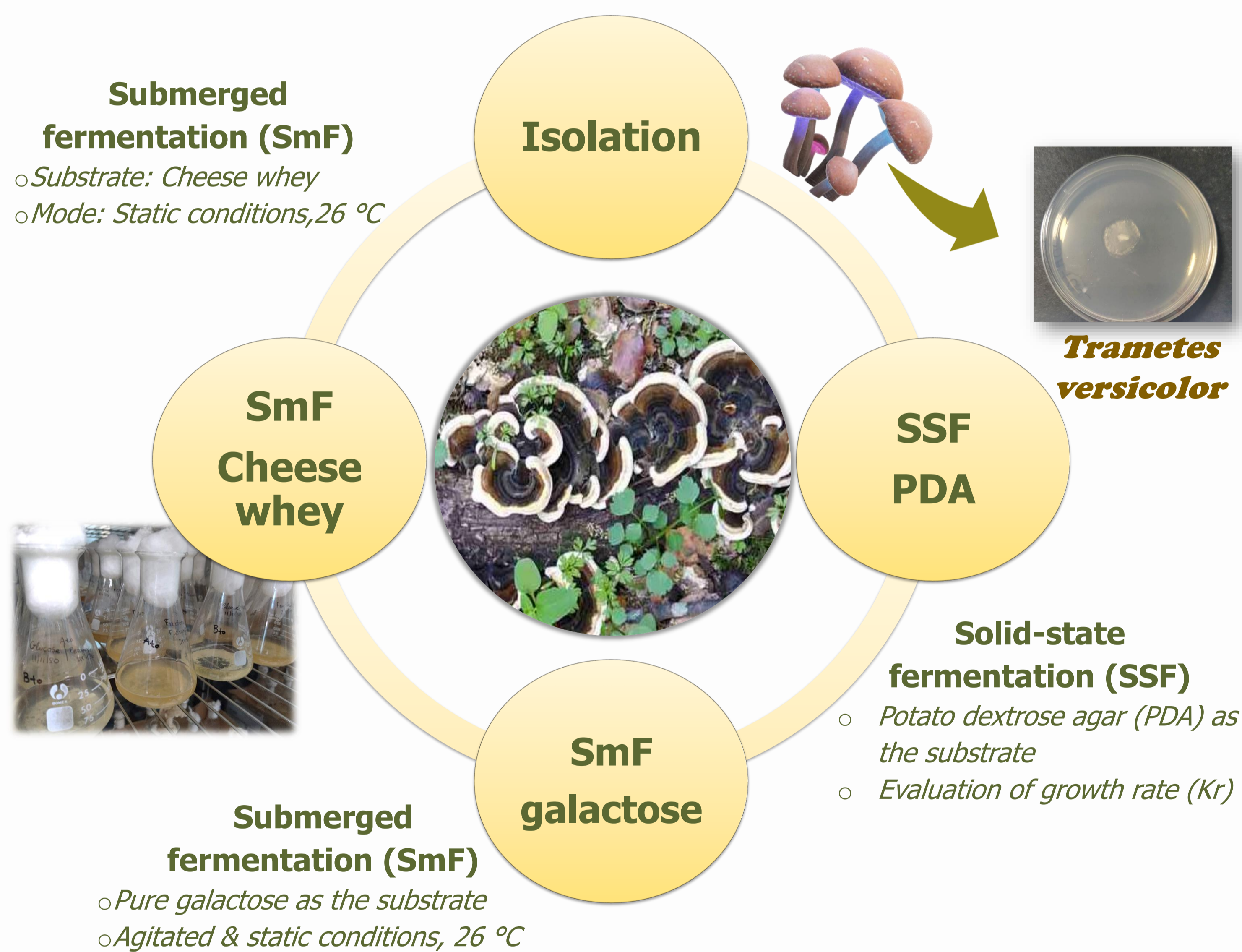


## Introduction

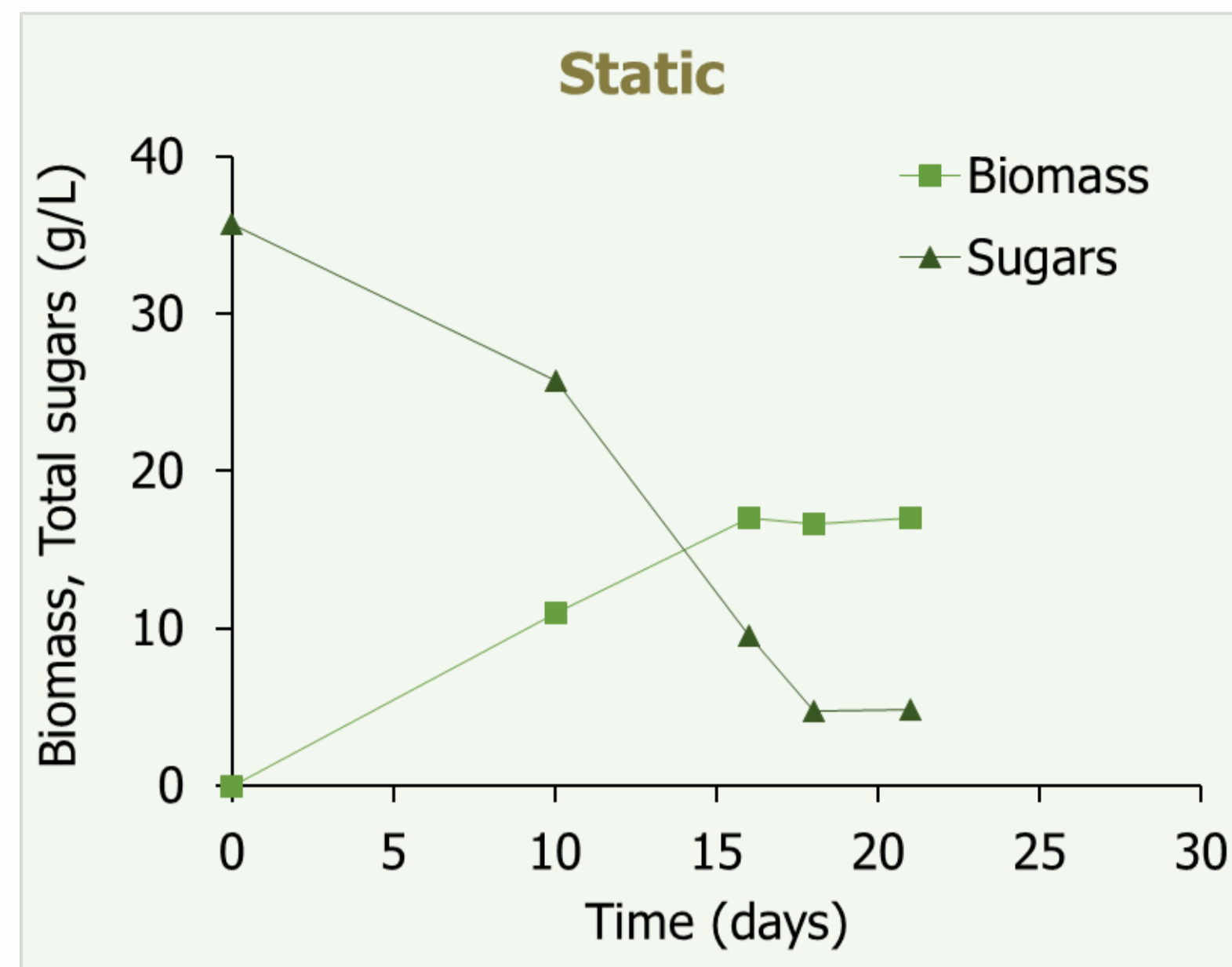
Up-to-date, many studies have been conducted, focusing on the biotechnological conversion of cheese whey in valuable products, including microbial lipids and organic acids, among others. In all these cases an additional downstream step is essential to recover the microbial metabolites. Mushroom cultivation using cheap agro-industrial by-products as substrate, offers the advantage of easier product recovery without complicated downstream processes. Besides the conventional mushroom solid-state cultivation, mycelial mass could be also produced via submerged fermentation mode.

This work was aimed to study the growth behaviour of *Trametes versicolor* ATHUM 9921, a newly isolated strain from Kefalonia island, using cheese whey as fermentation substrate.

## Materials & Methods

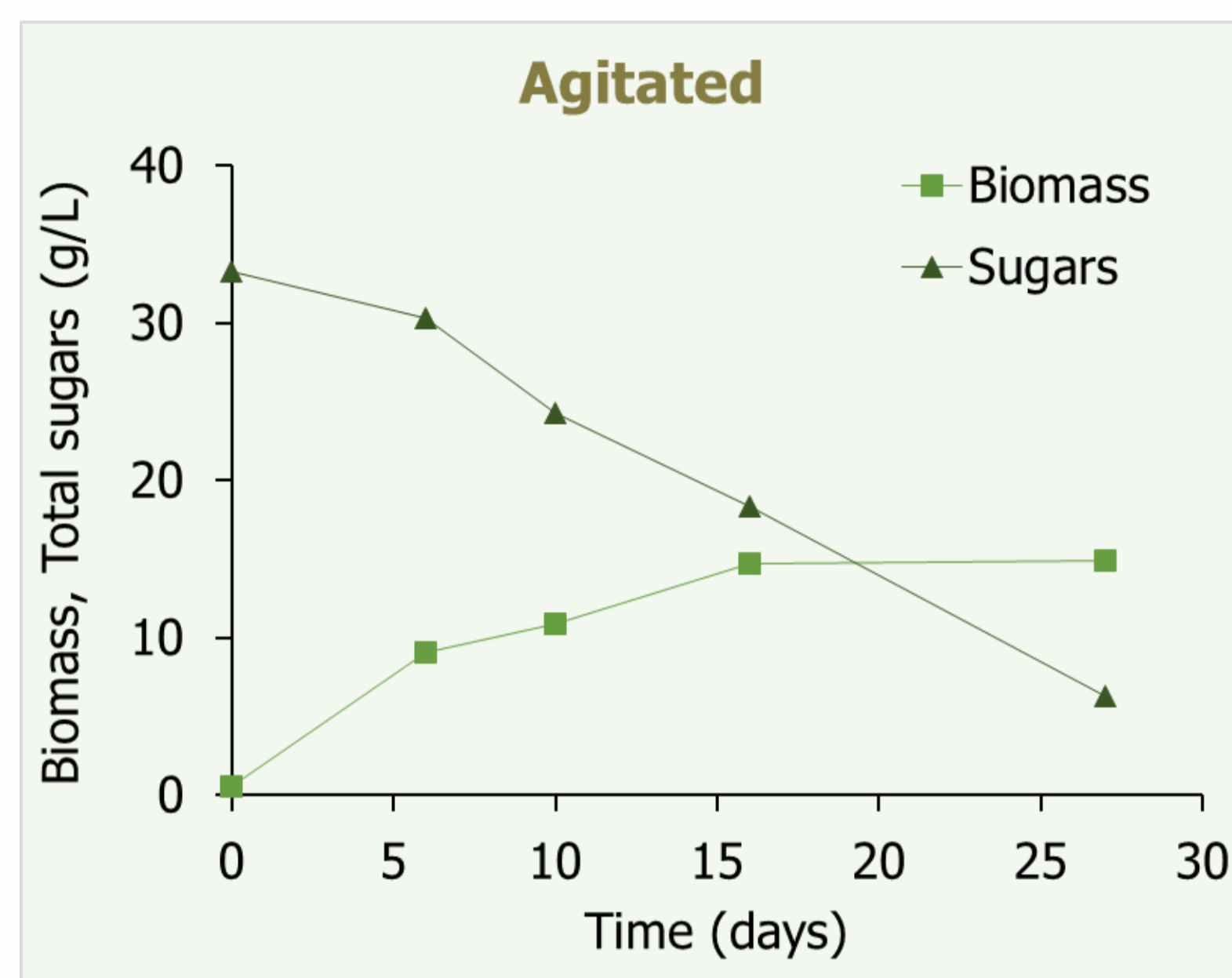
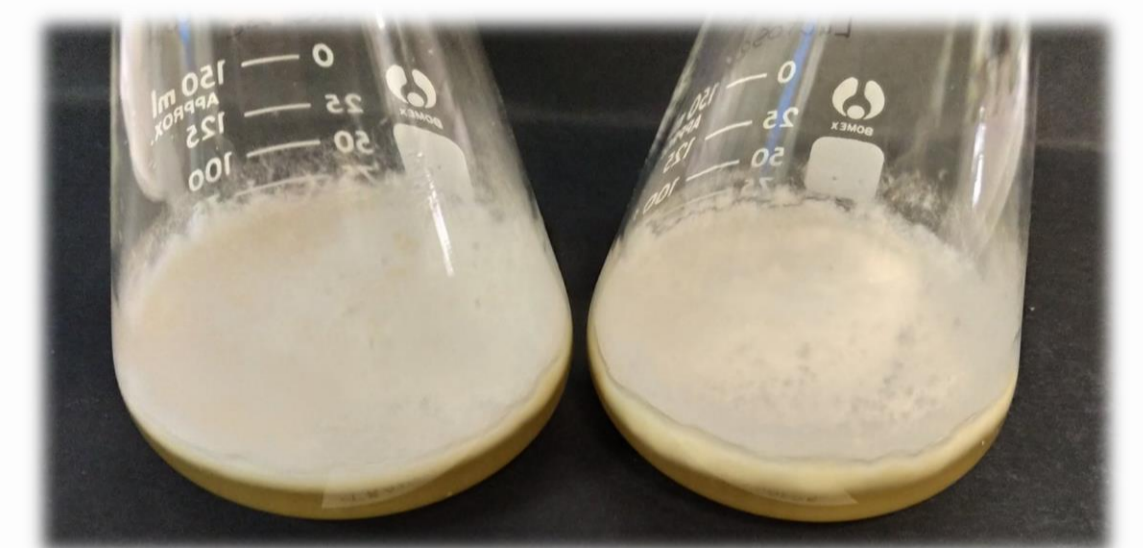


## SMF: LACTOSE MEDIUM



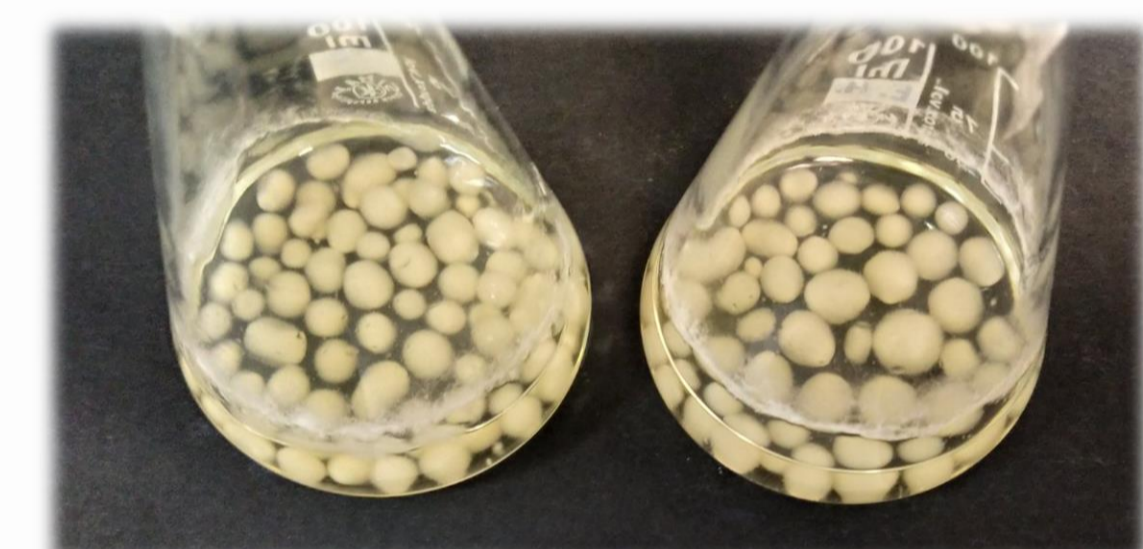
### Static conditions:

- 17 g/L biomass at 16 days
- Lactose consumption 81%

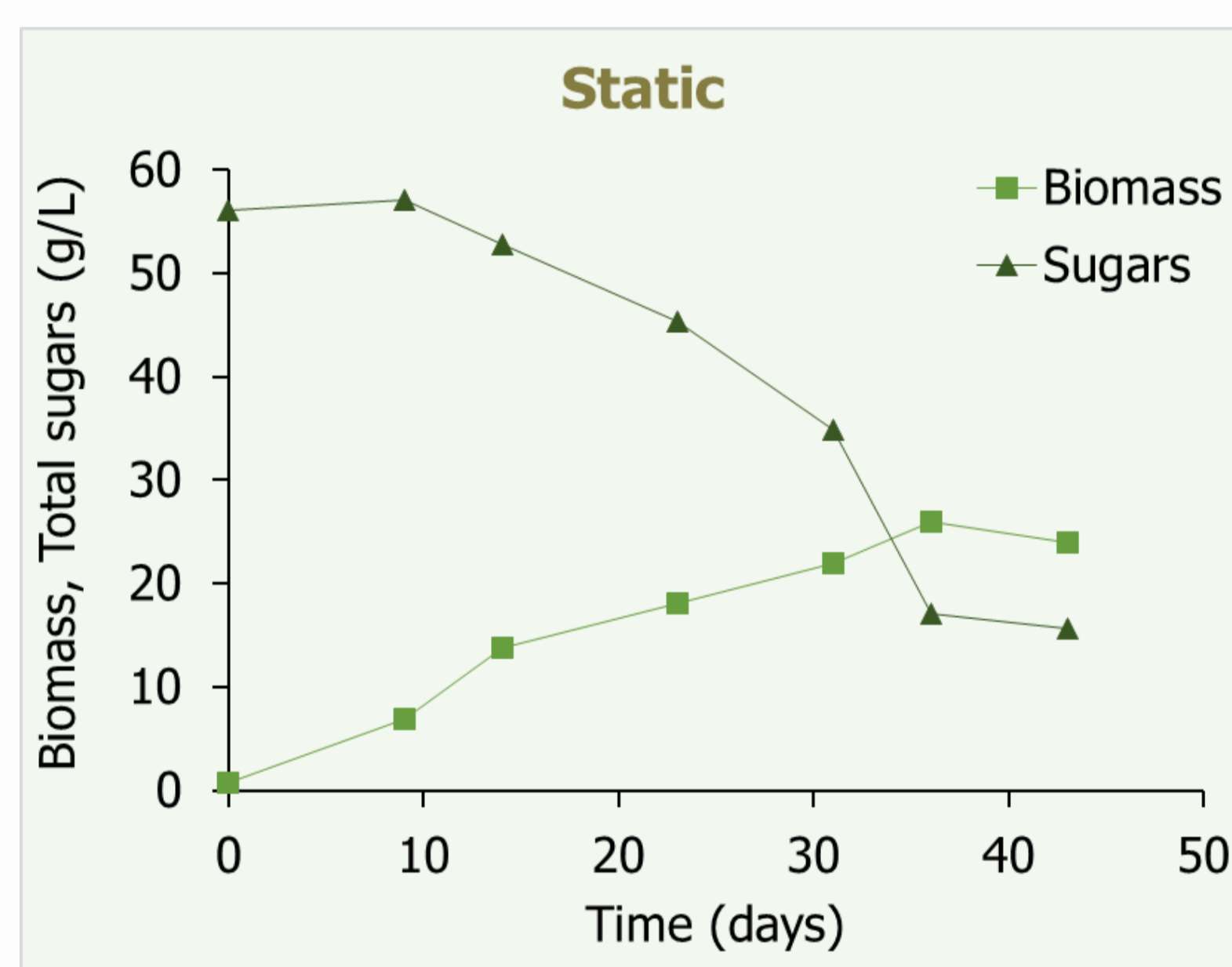


### Agitated conditions:

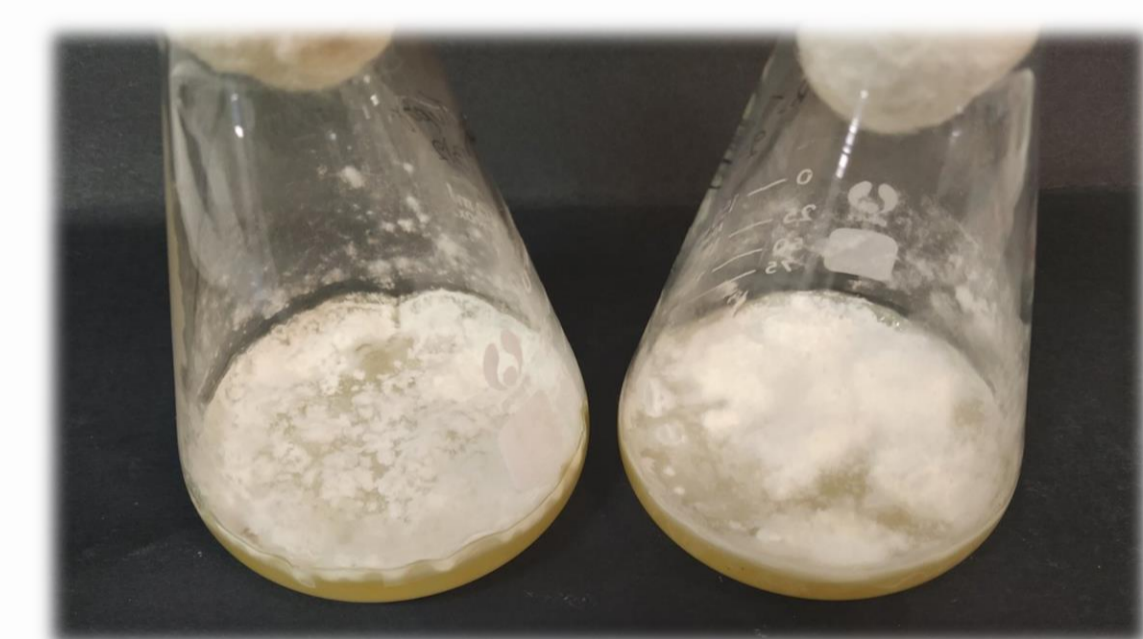
- 14.7 g/L biomass production at 16 days
- Lactose consumption 86.4%



## SMF: CHEESE WHEY MEDIUM



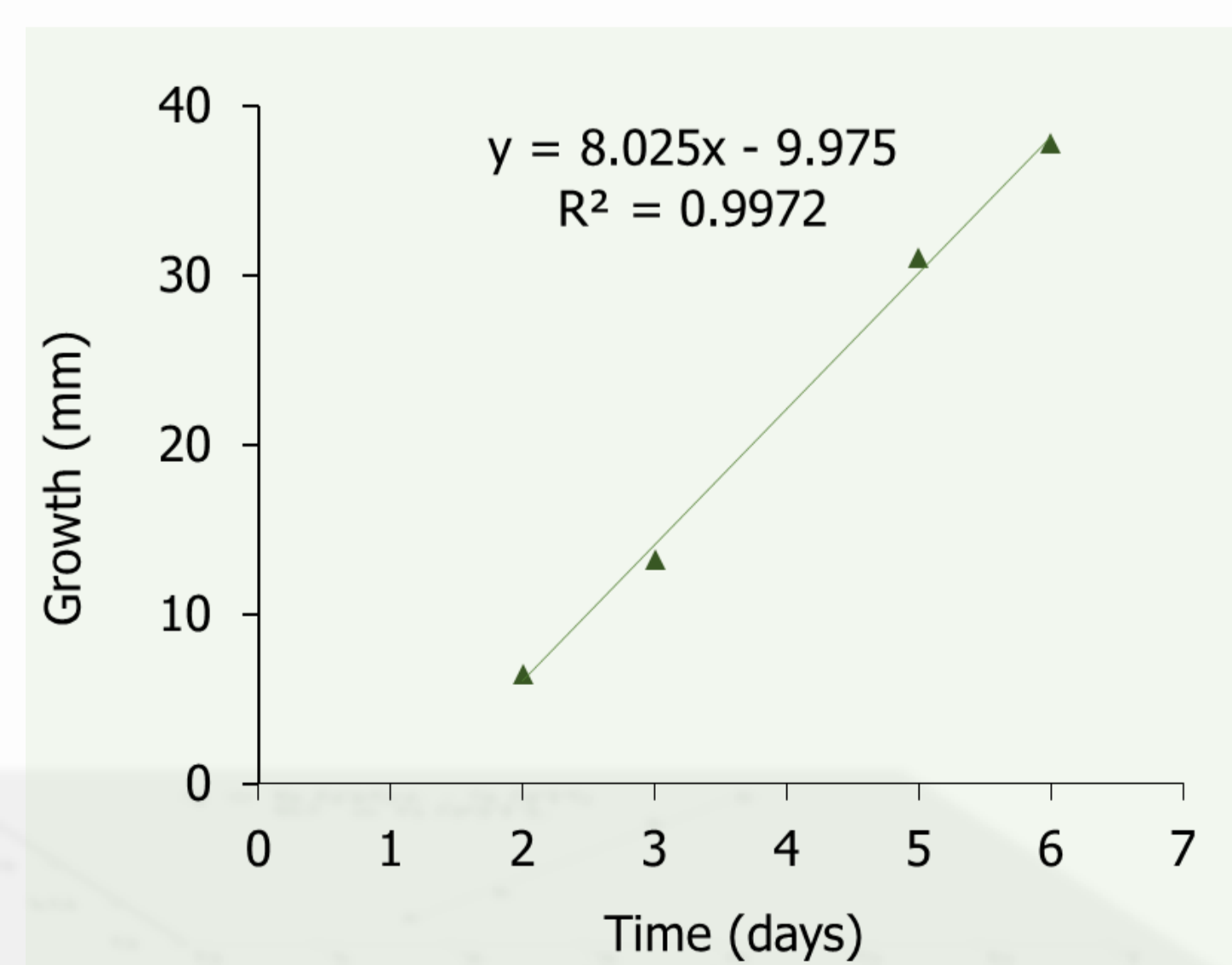
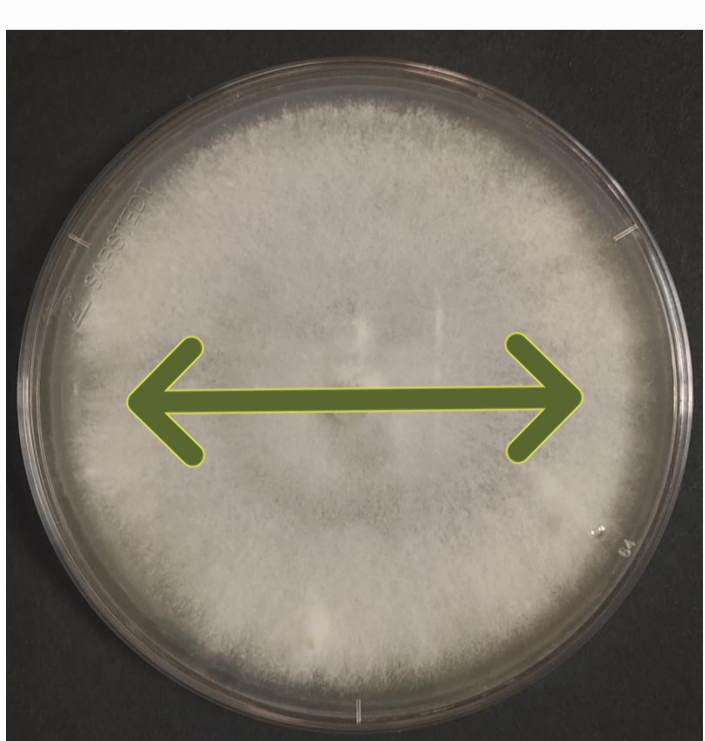
- Cheese whey was the sole carbon and nitrogen source
- Lactose consumption 72.2%
- 26 g/L Biomass production



## Results & Discussion

### SSF: GROWTH RATE

- The radius growth rate (Kr) of mycelium was 8.0 mm/day



## Conclusions

- ✓ *Trametes versicolor* was able to ferment lactose, indicating the production of beta-galactosidase enzyme.
- ✓ Sugar consumption rate and biomass production were higher in static fermentations, compared to agitated conditions.
- ✓ A maximum biomass of 26 g/L was obtained using cheese whey as the sole carbon and nitrogen source.
- ✓ Future studies will focus on exopolysaccharides production and their respective properties, in order to highlight potential commercial applications.

## Acknowledgements

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