

A Systematic Review (Before 31 July 2023)

Yarrowia lipolytica as a Valorization Biofactory

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Abstract

Yarrowia lipolytica is a yeast that has gained industrial biotechnology applications in the production of enzymes and organic metabolites, such as lipids and organic acids. In biotechnology, valorization is the conversion of low value substrate(s) into high value product(s). Hence, *Y. lipolytica* is a suitable candidate for valorization due to its high tolerance to common inhibitors. However, a systematic review on the use of *Y. lipolytica* as a biofactory for valorization has not been done. Here, we present a systematic review on the use of *Y. lipolytica* as a biofactory for valorization using articles indexed in PubMed prior to July 31, 2023. 50 articles were identified; of which, 38 articles were included in this review. Our main findings are as follows: (a) 27 (71%) studies uses laboratory strains of *Y. lipolytica*, (b) 22 (58%) studies uses defined media, and (c) 35 (92%) studies focused on organic metabolite production and protein expression, which may involve genetic engineering. This systematic review can form an overview on the use of *Y. lipolytica* in valorization.

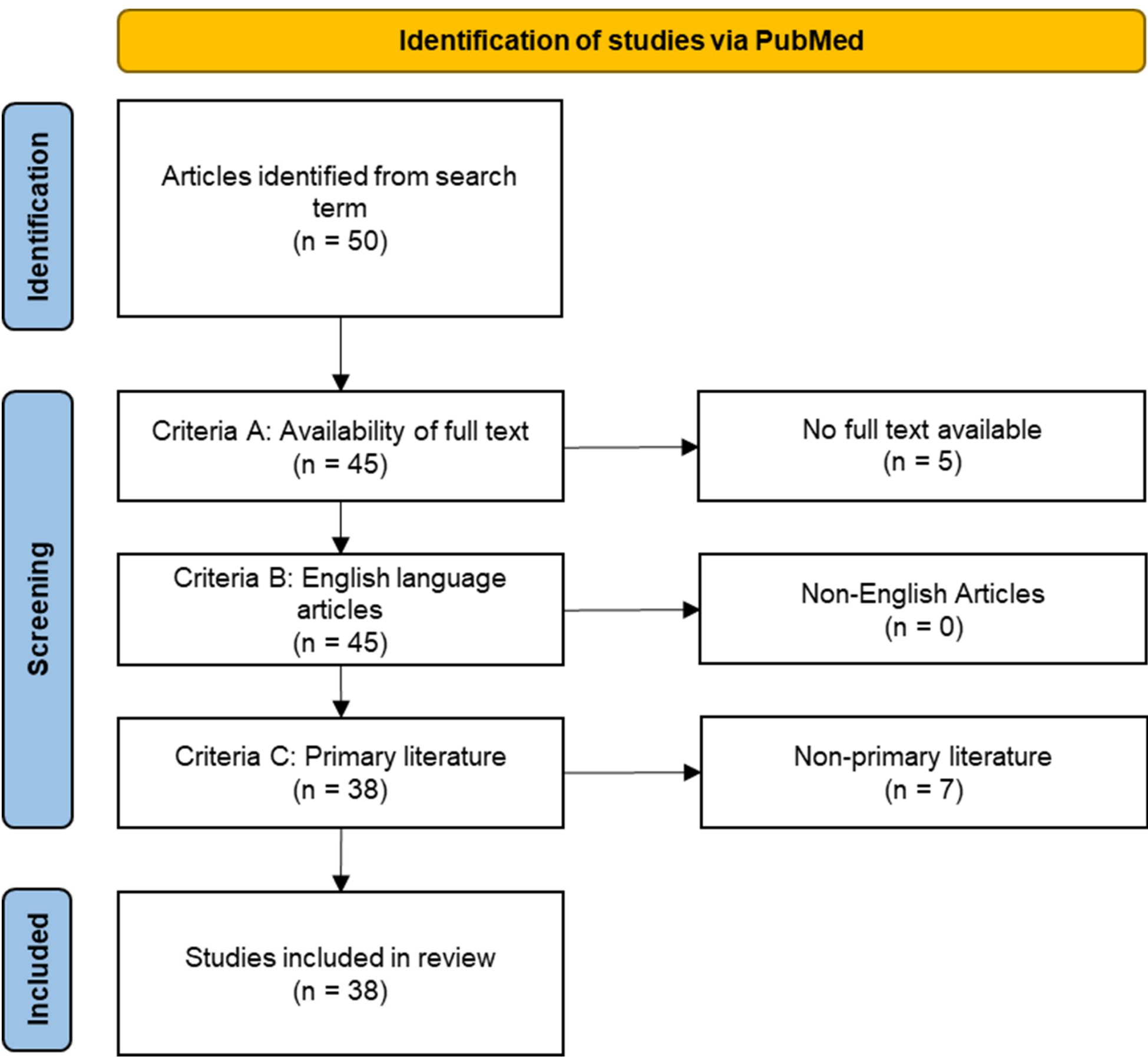
Search Method

- Database:** PubMed
- Search Term:** "Yarrowia lipolytica" AND (valor* OR biofactory OR "bio-factory" OR "microbial factory")
- Date Limit:** 01 Jan 1000 (default start date) to 31 July 2023
- URL:** [https://pubmed.ncbi.nlm.nih.gov/?term="Yarrowia+lipolytica"+AND+\(valor*+OR+biofactory+OR+"bio-factory"+OR+"microbial+factory"\)&filter=dates.1000/1/1-2023/7/31](https://pubmed.ncbi.nlm.nih.gov/?term="Yarrowia+lipolytica"+AND+(valor*+OR+biofactory+OR+"bio-factory"+OR+"microbial+factory")&filter=dates.1000/1/1-2023/7/31)

Exclusion Criteria: (A) No full text, (B) Non-English article, and (C) Non-primary literature

Development of Search Term

Search Terms	Number of Hits
"Yarrowia lipolytica"	2230
Valor*	22076
Biofactory OR "bio-factory" OR "microbial factory"	531
"Yarrowia lipolytica" AND valor*	45
"Yarrowia lipolytica" AND (biofactory OR "bio-factory" OR "microbial factory")	5
"Yarrowia lipolytica" AND (valor* OR biofactory OR "bio-factory" OR "microbial factory")	50



Results: Themes of Articles

