

# Contents

<b><i>Yarrowia lipolytica</i>: An Overview</b> . . . . .	1
1 Taxonomy and Ecology . . . . .	1
2 Morphology and Cell Biology . . . . .	2
3 Physiology and Metabolism . . . . .	6
4 Genetics and Molecular Biology . . . . .	10
5 Conclusion . . . . .	12
References . . . . .	12
 <b><i>Yarrowia lipolytica</i> in Biotechnological Applications</b> . . . . .	17
1 Extracellular Enzymes Production . . . . .	17
1.1 Lipases and Esterases . . . . .	18
1.2 Proteases . . . . .	22
1.3 Phosphatases . . . . .	25
1.4 RNase . . . . .	25
1.5 Asparaginase . . . . .	26
1.6 Laccase . . . . .	26
1.7 Mannosidase . . . . .	26
1.8 Inulinase . . . . .	27
2 Organic Acids Production . . . . .	27
2.1 Citric and Isocitric Acids . . . . .	28
2.2 $\alpha$ -Ketoglutaric Acid . . . . .	29
2.3 Pyruvic Acid . . . . .	31
2.4 Succinic Acid . . . . .	31
3 Fatty Acid and Alkane Bioconversions . . . . .	32
4 Importance in Food and Feed Industries . . . . .	35
4.1 Traditional Food Making . . . . .	35
4.2 Single Cell Protein . . . . .	37
4.3 Carotenoids . . . . .	38
5 Fine Chemistry and Pharmaceutical Applications . . . . .	38
5.1 Resolution of 2-Bromo-arylacetic Acid Esters . . . . .	39
5.2 Ofloxacin Synthesis . . . . .	39
5.3 L-Hydroxybutyric Acid Production . . . . .	40

5.4	Production of L-Dopa . . . . .	41
5.5	Production of Halohydrin Precursor of (S)-Propranolol . . . . .	41
5.6	Terpenes . . . . .	42
6	Environmental Applications . . . . .	42
6.1	Waste Treatment . . . . .	43
6.2	Bioremediation and Biodegradation of Environmental Pollutants . . . . .	45
6.3	Bioaccumulation of Heavy Metals . . . . .	47
6.4	Trinitrotoluene Biotransformation . . . . .	49
7	Heterologous Proteins Expression System . . . . .	50
8	Miscellaneous Applications . . . . .	51
8.1	Biosensor . . . . .	51
8.2	Surface-Active Compounds Production . . . . .	57
8.3	Single Cell Oil . . . . .	59
8.4	Polyols Production . . . . .	60
9	Conclusion . . . . .	61
	References . . . . .	61

Biotechnological Applications of the Yeast *Yarrowia  
lipolytica*

Darvishi Harzevili, F.

2014, IX, 74 p. 11 illus., 4 illus. in color., Softcover

ISBN: 978-3-319-06436-9