

## Maria Alexandri

Agronomist-Food Technologist, PhD

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**Publications: 37; Citations: 1014; h-index: 22 (google scholar)**

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### Short CV

Dr Maria Alexandri is an Agronomist (diploma in Agriculture with expertise in Food Science and Human Nutrition, 2012), with a PhD in industrial biotechnology (AUA, 2017). During her PhD studies, she carried out research on valorization of industrial by-product streams (spent sulphite liquor and sugar beet pulp) via their fractionation into value-added compounds (phenolic compounds, lignosulphonates, pectins etc) and their biotechnological conversion into succinic acid. She has also investigated different separation and purification techniques for the efficient separation of succinic acid from fermentation broths. She worked for two years (2017-2019) as research scientist at Leibniz Institute of Agricultural Engineering and Bioeconomy (ATB, Potsdam, Germany), where she focused on the biotechnological conversion of defatted rice bran into lactic acid in lab and pilot scales. Aiming to utilize the biotechnologically produced lactic acid into poly(lactic acid), she also worked on downstream separation and purification using modern techniques (ultra- and nano-filtration, bipolar electro dialysis, ion exchange chromatography) in lab and pilot scales. She has also worked as a research scientist at the Agricultural University of Athens (Department of Food Science and Human Nutrition) (2019-2021) and at the Ionian University (Department of Food Science and Technology) (2021). Her research was mainly directed in the valorization of various agro-industrial waste streams (such as winery wastes and cheese whey) via microbial conversion into value-added products as well as the recovery and characterization of functional compounds. Since 2012, she has participated in 9 research programs, more than 20 international conferences.

### Research interests

- Recovery and analysis of functional components from side streams of the agro-food sector
- Biotechnological production of added value products through the utilization of waste or side streams of the agro-food sector (organic acids, bio-dyes, bacterial cellulose, PHAs, ethanol)
- Development of appropriate methodologies for the recovery and purification of biotechnological products
- Holistic utilization of waste and by-products in the context of the circular economy.

### Participation in research programs:

**2021-2022:** Infrastructure of Microbiome Applications in Food Systems-FOODBIOMES (MIS 5047291), implemented under the Action “Regional Excellence in R&D Infrastructures”, funded by the Operational Program “Competitiveness, Entrepreneurship and Innovation” (NRSF 2014-2020) and co-financed by Greece and the European Union.

**2019-2021:** Research Infrastructure for Waste Valorisation and Sustainable Management of Resources, INVALOR” (MIS 5002495) which is implemented under the Action

“Reinforcement of the Research and Innovation Infrastructure”, funded by the Operational Program "Competitiveness, Entrepreneurship and Innovation" (NSRF 2014-2020) and co-financed by Greece and the European Union

**2021:** Participation in the project “Mediterraninity” in the framework of “New Agriculture, New Generation” funded by Stavros Niarchos Foundation.

**2021:** Participation in the research project “PHB production using *Jatropha* fruit shell hydrolysates” funded by the company JOil Pte Ltd (Singapore).

**2021:** Participation in the research project “PHB production using *Jatropha* seed cake hydrolysates” funded by the company JOil Pte Ltd (Singapore).

**2021:** Participation in the research project “Optimization of bioethanol production” funded by the company American Process International (USA).

**2020:** Horizon 2020/BBI-JU: Chemical building blocks from versatile MSW biorefinery-Acronym: PERCAL (Topic: BBI-2016-R08).

**2017-2019:** BMBF-Bioeconomy International “BranLact: Thermophilic lactic acid production utilizing rice bran in continuous cultivation”

**2015:** Participation in the research project “Enzyme production and chemical compounds (1,3-propanediol, 2,3-butanediol and fumaric acid) for the production of petrochemicals” funded by the company Petrobras (Brazil).

**2012-2015:** Seventh Framework Program (FP7) “New tailor-made biopolymers produced from lignocellulosic sugars wastes for highly demanding fire-resistant applications” Grant agreement no: 311935

### List of publications

1. Sereti, F., Papadaki, A., Alexandri, M., Kachrimanidou, V., & Kopsahelis, N. (2023). Exploring the potential of novel *R. kratochvilovae* red yeasts towards the sustainable synthesis of natural carotenoids. *Sustainable Chemistry and Pharmacy*, 31, 100927.
2. Kachrimanidou, V., Papadaki, A., Alexandri, M., Poullos, V., Gonou-Zagou, Z., & Kopsahelis, N. (2023). *Sepedonium* sp. and *Phellinus* sp. Novel Isolates: Growth Pattern and Production of Polysaccharide-Protein Complexes on Conventional and Grape Pomace Substrates. *Waste and Biomass Valorization*, 1-12.
3. Alexandri, M., Hübner, D., Schneider, R., Fröhling, A., & Venus, J. (2022). Towards efficient production of highly optically pure d-lactic acid from lignocellulosic hydrolysates using newly isolated lactic acid bacteria. *New Biotechnology*, 72, 1-10.
4. Kachrimanidou, V., Alexandri, M., Nascimento, M. F., Alimpoumpa, D., Torres Faria, N., Papadaki, A., & Kopsahelis, N. (2022). Lactobacilli and *Moesziomyces* Biosurfactants: Toward a Closed-Loop Approach for the Dairy Industry. *Fermentation*, 8(10), 517.
5. Alexandri, M., Kachrimanidou, V., Papapostolou, H., Papadaki, A., Kopsahelis, N. (2022). Sustainable Food Systems: The Case of Functional Compounds towards the Development of Clean Label Food Products, *Foods*, 11 (18): 2796.

6. Lappa, I. K., Kachrimanidou, V., Alexandri, M., Papadaki, A., & Kopsahelis, N. (2022). Novel Probiotic/Bacterial Cellulose Biocatalyst for the Development of Functional Dairy Beverage. *Foods*, 11(17), 2586.
7. Filippi, K., Papapostolou, H., Alexandri, M., Vlysidis, A., Myrtsi, E. D., Ladakis, D., & Koutinas, A. (2022). Integrated biorefinery development using winery waste streams for the production of bacterial cellulose, succinic acid and value-added fractions. *Bioresource Technology*, 343, 125989.
8. Filippi, K., Georgaka, N., Alexandri, M., Papapostolou, H., & Koutinas, A. (2021). Valorisation of grape stalks and pomace for the production of bio-based succinic acid by *Actinobacillus succinogenes*. *Industrial Crops and Products*, 168, 113578.
9. Maina, S., Schneider, R., Alexandri, M., Papapostolou, H., Nychas, G. J., Koutinas, A., & Venus, J. (2021). Volumetric oxygen transfer coefficient as fermentation control parameter to manipulate the production of either acetoin or D-2, 3-butanediol using bakery waste. *Bioresource technology*, 335, 125155.
10. Alexandri, M., Maina, S., Tsouko, E., Papapostolou, H., Koutinas, A., & Kourmentza, K. (2021). Valorization of fruit processing by-product streams into integrated biorefinery concepts: extraction of value-added compounds and bioconversion to chemicals. In *Valorization of Agri-Food Wastes and By-Products* (pp. 927-945). Academic Press.
11. Alexandri M., Blanco-Catalá J., Schneider R., Turon X., Venus J. 2020. High L(+)-lactic acid productivity in continuous fermentations using bakery waste and lucerne green juice as renewable substrates. *Bioresource Technology*, 316: 123949.
12. Olszewska-Widdrat A., Alexandri M., López-Gómez J.P., Schneider R., Venus J. 2020. Batch and continuous lactic acid fermentation based on a multi-substrate approach. *Microorganisms*, 8(7): 1-14.
13. Alexandri M., López-Gómez J.P., Olszewska-Widdrat A., Venus J. 2020. Valorising agro-industrial wastes within the circular bioeconomy concept: The case of defatted rice bran with emphasis on bioconversion strategies. *Fermentation*, 6(2):1-18.
14. Alves De Oliveira R., Alexandri M., Komesu A., Venus J., Vaz Rossell C.E., Maciel Filho R. 2020. Current advances in separation and purification of second-generation lactic acid. *Separation & Purification Reviews*, 49 (2):159-175.
15. López-Gómez J.P., Alexandri M., Schneider R., Latorre-Sánchez M., Coll Lozano C., Venus J. 2020. Organic fraction of municipal solid waste for the production of L-lactic acid with high optical purity. *Journal of Cleaner Production*, 247: 119165.
16. Alexandri M., Demichelis F., Fiore S., Lübeck M., Pleissner D. 2020. Biorefineries in Germany, eds Bhaskar T., Pandey A., Rene E.R., Tsang D.C.W., Book Chapter in *Waste Biorefinery: Integrating Biorefineries for Waste Valorisation*, Elsevier, pp 601-629.
17. Olszewska-Widdrat A., Alexandri M., López-Gómez J.P., Schneider R., Mandl M., Venus J. 2019. Production and purification of L-lactic acid in lab and pilot scales using sweet sorghum juice. *Fermentations*, 5(2), 36.
18. López-Gómez J.P., Alexandri M., Schneider R., Venus J. 2019. A review on the current developments in continuous lactic acid fermentations and case studies utilizing inexpensive substrates. *Process Biochemistry*, 79: 1-10.
19. Alexandri M., Neu A.K., Schneider R., López-Gómez J.P., Venus J. 2019 Evaluation of various *Bacillus coagulans* isolates for the production of high purity L-lactic acid using defatted rice bran hydrolysates. *International Journal of Food Science and Technology*, 54:1321-1329.

20. Alexandri M., Schneider R., Papapostolou H., Koutinas A., Venus J. 2019. Restructuring the conventional sugar beet industry into a novel biorefinery: Fractionation and bioconversion of sugar beet pulp into succinic acid and value-added coproducts. *ACS Sustainable Chemistry and Engineering*, 7(7): 6569-6579.
21. Alexandri M., Vlysidis A., Papapostolou H., Tverezovskaya O., Tverezovskiy V., Kookos I., Koutinas A. 2019. Downstream separation and purification of succinic acid from fermentation broths using spent sulphite liquor as feedstock. *Separation and Purification Technology*, 209: 666-675.
22. Alexandri M., Schneider R., Mehlmann K., Venus J. 2019. Recent advances in D-lactic acid production from renewable resources: case studies on agro-industrial waste streams. *Food Technology and Biotechnology*, 57 (3): 293- 304.
23. Tsouko E., Alexandri M., Vieira Fernandes K., Guimarães Freire D.M., Mallouchos A., Koutinas A.A. 2019. Extraction of phenolic compounds from palm oil processing residues and their application as antioxidants. *Journal of Food Technology and Biotechnology*, 57(1): 29-38.
24. Alexandri M., Schneider R., Venus J. 2018. Membrane technologies for lactic acid separation from fermentation broths derived from renewable resources. *Membranes* 8(94):1-13
25. Papadaki A., Papapostolou H., Alexandri M., Kopsahelis N., Papanikolaou S., de Castro A., Freire D.M.G., Koutinas A.A. 2018. Fumaric acid production using renewable resources from biodiesel and cane sugar production processes. *Environmental Science and Pollution Research*. 25(36): 35960-35970, doi.org/10.1007/s11356-018-1791-y
26. Dal Prá V., Soares J.F., Monego D.L., Vendruscolo R.G., Freire D.M.G., Alexandri M., Koutinas A., Wagner R., Mazutti M.A. , Da Rosa M.B. 2018. Comparison of Different Compressed Fluids for Residual Oil Extraction from Palm Kernel Cake. *Waste and Biomass Valorisation*, 9(2): 265-271
27. Alexandri M., Venus J. 2017. Feedstock flexibility in sustainable chemistry: Bridging sectors still not sufficiently familiar with each other- Showcases of ongoing and emerging initiatives. *Current opinion in Green and Sustainable Chemistry*, 8: 24-29
28. Dal Prá V., Lunelli F.C., Vendruscolo R.G., Martins R., Wagner R., Lazzareti Jr. A.P., Freire D.M.G., Alexandri M., Koutinas A., Mazutti M.A. , Da Rosa M.B. 2017. Ultrasound-assisted extraction of bioactive compounds from palm pressed fiber with high antioxidant and photoprotective activities. *Ultrasonics Sonochemistry*, 36: 362-366
29. Alexandri M., Papapostolou H., Stragier L., Verstraete W., Papanikolaou S., and Koutinas A.A. 2017. Succinic acid production by immobilized cultures using spent sulphite as fermentation medium. *Bioresource Technology*, 238: 214-222
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31. Almqvist H., Pateraki C., Alexandri M., Koutinas A., Lidén G. 2016. Succinic acid production by *Actinobacillus succinogenes* from batch fermentation of mixed sugars. *Journal of Industrial Microbiology and Biotechnology*, 43(8): 1117-1130.
32. Alexandri M., Papapostolou H., Komaitis M., Stragier L., Verstraete W., Danezis G.P., Georgiou C.A., Papanikolaou S., and Koutinas A.A. 2016. Evaluation of an

- integrated biorefinery based on fractionation of spent sulphite liquor for the production of an antioxidant-rich extract, lignosulphonates and succinic acid. *Bioresource Technology*, 214: 504-513.
33. Dal Prá V., Soares J.F., Monego D.L., Vendruscolo R.G., Freire D.M.G., Alexandri M., Koutinas A., Wagner R., Mazutti M.A. , Da Rosa M.B. 2016. Extraction of bioactive compounds from palm (*Elaeis guineensis*) pressed fiber using different compressed fluids. *Journal of Supercritical Fluids*, 112: 51-56.
  34. Llano T., Alexandri M., Koutinas A., Gardeli C., Papapostolou H., Coz A., Quijorna N., Andres A., Komaitis M. 2015. Liquid-liquid extraction of phenolic compounds form spent sulphite liquor. *Waste and Biomass Valorization*, 6(6):1149-1159, DOI 10.1007/s12649-015-9425-9
  35. Kachrimanidou V., Kopsahelis N., Alexandri M., Strati A., Gardeli C., Papanikolaou S., Komaitis M., Kookos I.K., Koutinas A.A. 2015. Integrated sunflower-based biorefinery for the production of antioxidants, protein isolate and poly(3-hydroxybutyrate). *Industrial Crops and Products*, 71: 106-113.
  36. Pateraki, C., Alexandri, M., Papapostolou, H., Vlysidis, A., Papanikolaou, S., & Koutinas, A. A. (2013). Valorization of by-product streams from the pulp and paper industry for succinic acid production.
  37. García I.L., López J.A., Dorado M.P., Kopsahelis N., Alexandri M., Papanikolaou S., Villar M.A., Koutinas A.A. 2013. Evaluation of by-products from the biodiesel industry as fermentation feedstock for poly(3-hydroxybutyrate-co-3-hydroxyvalerate) production by *Cupriavidus necator*. *Bioresource Technology*, 130: 16-22.