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REVIEW

Microbial biotransformation as a tool for drug development based on natural products from mevalonic acid pathway: A review

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ABSTRACT

Natural products are structurally and biologically interesting metabolites, but they have been isolated in minute amounts. The syntheses of such natural products help in obtaining them in bulk amounts. The recognition of microbial biotransformation as important manufacturing tool has increased in chemical and pharmaceutical industries. In recent years, microbial transformation is increasing significantly from limited interest into highly active area in green chemistry including preparation of pharmaceutical products. This is the first review published

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on the usage of microbial biocatalysts for some natural product classes and natural product drugs.

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Mohamed-Elamir F. Hegazy, Associate Professor in Chemistry of Medicinal plant Department, National Research Center, who has two Ph.D. degrees: A Ph.D. degree from Hiroshima University, Japan, and a Ph.D. degree from Elminia University, Egypt. Dr. Hegazy is working in the field of natural products chemistry and biotransformation of natural compounds with cultured plant cells from ten years ago and he had a strong experience in the isolation, purification and identification of natural compounds form medicinal plants and marine organisms using high technique for identification (1D and 2D NMR analysis).

Tarik A. Mohamed, Researcher in National Research Centre, Egypt. His research interest focused on Chemical Constituents of Medicinal Plants and Marine Organisms, Extraction, Isolation and Purification of Natural Bioactive Compounds, Structural Elucidation of Natural Products by Modern Techniques of Spectroscopic Analysis, MS, HRMS, 1D and 2D NMR and X-ray analysis, Biological Activities of Natural Products against different common diseases and Biotransformation for Natural Compounds.

Abd El-Samid I. El-Shamy, Researcher in National Research Centre, Egypt. His research experiences are focused on isolation, identification of phenanthrenes, flavonoids, sterols, terpenes, coumarines, volatile oils, ceramides from medicinal plants and marines by different isolation and identification methods. Synthesis of derivatives of natural products. Bioactive assay *in vivo* and *in vitro* of natural products such as hepatoprotective, anticancer, antimicrobial and antiulcer.

Abou-El-Hamd H. Mohamed, Professor of Natural products chemistry. He is a specialist in natural products isolation and purification of natural product compounds by using different technique (Column chromatography, TLC, HPLC) Identification of naturally isolated pure compounds by using 1D and 2D NMR analysis II – Biotransformation and biocatalysis with Plant cell tissue culture; Biotransformation of organic and natural compounds; Enzyme purification Bioassay.

Usama A. Mahalel, Associate Professor of plant taxonomy. His research interest, include Medicinal plant and natural products chemistry.

Eman H. Reda, a master student, has an experience in isolation and purification of the active constituents from medicinal plants using modern techniques.

Alaa M. Shaheen, a master student, has an experience in isolation and purification of the active constituents from medicinal plants using the modern techniques.

Wafaa A. Tawfik, Assoc. Prof. of Phytochemistry. She has experience in Phytochemical screening of medicinal plants, isolation and identification of the active constituents by using the modern physiochemical techniques, isolating colors and flavors from natural resources, Extraction of oils from plants, interpretation of spectral data with special emphasis to NMR analysis.