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Biotransformation of curcumin and structure–activity relationship (SAR) of its analogues: A systematic review
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Abstract
Curcumin has been widely acclaimed for several pharmacological properties, such as antioxidant, antimicrobial, anticancer, and anti-inflammation. Curcumin's poor aqueous solubility, bioavailability, and cellular uptake hamper its ability to display maximum pharmacological effect in the human body. Synthesis of curcumin analogues to enhance its properties can be achieved through biotransformation. Greener, simpler, and higher selectivity and specificity make biotransformation an alternative approach when preparing curcumin analogues for the structure–activity relationship (SAR) study intended for drug design. This work systematically reviews the biotransformation of curcumin by utilizing fungi, gut microbiota, and enzymes. The SAR study of curcumin and its analogues for several bioactivities is also highlighted. © 2022 Informa UK Limited, trading as Taylor & Francis Group.

Author Keywords
biocatalysts; Biotransformation; curcumin; gut microbiota; structure–activity relationship; systematic review

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Biochemistry, Bioconversion; Anti-inflammation, Aqueous solubility, Biotransformation, Cellular uptake, Curcumin, Gut microbiota, Pharmacological effects, Pharmacological properties, Structure-activity relationships, Systematic Review; Enzymes; acetate kinase, beta glucuronidase, curcumin, glucan 1,4 alpha glucosidase, glycosyltransferase, n acetyl dextro glucosamine kinase, phosphomannomutase, phosphotransferase, ump kinase, unclassified drug, uridine diphosphate alpha dextro glucose synthase; antimicrobial activity, antineoplastic activity, antioxidant activity, biocatalyst, biological activity, drug cytotoxicity, drug design, drug transformation, enzyme activity, fungus, futurology, human, intestine flora, nonhuman, Review, structure activity relation, systematic review

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