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Photocatalytic degradation of food and juices dyes via photocatalytic nanomaterials synthesized through green synthetic route: A systematic review

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The most difficult problem of the present day is the scarcity of safe and sanitary food sources. Major risks to human health result from the excessive use of hazardous colorant moieties in the cosmetics and food industries. Research on strategies for removing these harmful dyes has received considerable interest in recent decades. The photocatalytic degradation of hazardous food colors is the primary subject of this review paper, which primarily focuses on the use of green-synthesized nanoparticles (NPs) for this purpose. Because of their negative impact on human health and the environment, synthetic dyes are increasingly becoming an issue of concern in the food sector. Photocatalytic degradation has evolved in recent years as an efficient and environmentally acceptable method for the complete removal of these dyes from wastewater. Green-synthesized NPs, such as metal and metal oxide NPs, are discussed in this review since they have been employed for

photocatalytic degradation (without producing any secondary pollutant). It also describes the processes involved in making these NPs, the methods that were employed to evaluate them, and the photocatalytic activity they exhibit. The paper also investigates the mechanics behind the green-synthesized NPs' photocatalytic degradation of hazardous food colors. Also indicated are the several causes of photo degradation. The economic cost, along with the pros and cons, are briefly examined. The comprehensive nature of this review makes it useful for students of dyes' photo degradation. This assessment also includes discussion of some potential future developments and constraints. This review sheds light on the possibility of green-synthesized NPs as an alternative to conventional treatment methods for the elimination of harmful food dyes in wastewater.

Keywords: green synthesis; nanoparticles; dyes; photo degradation; degradation mechanism

Biography

Kashif Ali Khan is an MPhil research scholar at Department of Chemistry, QAU, Islamabad. Also serving as Lecturer in Chemistry at Government Degree College, Gandaf, Swabi. His research areas include electrochemical sensing, Photocatalytic Degradation, Green-synthesis, and adsorption studies. He aims at contributing to world by working with white coat scientific community on the problems that are plague to the society.

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