ABSTRACT

An efficient one-pot synthesis of xanthene and chromene derivatives are synthesized through three-component reactions of aryl aldehydes, cyclic 1,3-diketones and 2-naphthol/4-hydroxy coumarin catalyzed by ionic liquid 1-butyl-3-methylimidazolium hexafluorophosphate [bmim][PF$_6$] under microwave conditions. All the compounds synthesized above have been characterized using the spectral data and screened for *In vitro* antioxidant activity by DPPH method.

Compounds bearing two, three and four 9-aryl-1,8-dioxo-octahydro xanthene units were synthesized by regioselective O-alkylation of monopodal xanthenes with *bis*, *tris* and *tetrakis* (bromomethyl)benzenes as alkylating agents using K$_2$CO$_3$ as base and DMF as solvent in moderate temperature. All the synthesized compounds were characterized by NMR and mass spectral data and then tested for antioxidant activity, as reflected by free radical scavenging, increased with increasing number of xanthene units.

In terms of the diversity of quinolines, 2,4-dichloroquinolines can play as key intermediates in the synthesis of 2,4-disubstituted quinolines by possible stepwise substitution at C-4 and C-2 positions there by introducing a new C-O bonding between the two heterocyclic nucleus, which opens a broad field of new structures either with biological interest or with interesting properties. This prompted us to carry out the present work, in which one of the chlorine in 2, 4-dichloroquinolines is selectively replaced by 9-aryl-1,8-dioxo-octahydro xanthenes under controlled temperature. The products were characterized through spectral data and screened for their anti-malarial activity through molecular docking studies.

Copper (II) oxide (CuO) nanoparticles have been found to be an efficient catalyst for 1,3-dipolar cycloaddition (CuAAC) of aromatic azides and acetylenic xanthenes furnishing the corresponding xanthene substituted triazoles in excellent yields. CuO nanoparticles have been synthesized from copper acetate by simple co-precipitation method and characterized by scanning electron microscope, energy dispersive X-ray analysis, transmission electron microscope and X-ray diffraction analysis. The salient features of the present protocol are mild reaction conditions, shorter reaction time, reusability of the catalyst, and applicable with a wide range of substrates.