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Abstract

# Design, synthesis and cytotoxic studies of triaryl substituted imidazole derivatives as potential BRD4 kinase inhibitor.

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## Abstract:

Bromodomain 4 (BRD4) is promising new epigenetic target for human diseases including cancer, inflammation, viral and cardiovascular diseases. The affinity of triaryl substituted imidazole derivatives to the binding pocket of BRD4 kinase protein was investigated by using Schrodinger Maestro 9.0 docking software. In the present study, Radziszewski reaction was used for synthesis of designed new series of 2, 4, 5 triaryl substituted imidazole derivatives. All the final compounds were confirmed by IR, 1H NMR and 13C NMR. The in-vitro growth inhibition effect of synthesized compounds were assessed by SRB assay on human leukemia cancer cell lines (HL-60, K562 and OCI-AML-2) using adriamycin as a positive control. The assay findings suggested that synthesized derivatives AD4 and AD5 resulted anticancer activity for HL 60 cell line, this establishes the fact that electron withdrawing substitution like nitro or hydroxy at para position of aryl ring is more favored as compared to ortho and meta positions. The dibromo substitution on benzil ring along with electron withdrawing or electron releasing group on substituted imidazole ring enhance anticancer activity in KP series of compounds. The compounds KP-1, 3-8 indicated cytotoxicity towards K-562 human leukemia cell line whereas KP-1, 4, 7 and 8 showed anticancer activity against OCI-AML-2 human acute myeloid leukemia cell line.

## Biography:

Dr. Pankaj B. Miniyar is Professor of Pharmaceutical Chemistry at Sinhgad Institute of Pharmacy, Pune, India. He completed his M. Pharm. in 1st rank and Ph. D. in Pharmaceutical Chemistry. He has a total 20 years of academic & research experience. He has 30 research publications in various International & National journals. He has presented his research work in 50 National & International Conferences. He has 12 text books to his credit.

## Recent Publications:

1. Pankaj B. Miniyar, et al Bioorg Med Chem Lett, 2016
2. Pankaj B. Miniyar, et al Anticancer Agents Med Chem, 2015.
3. Pankaj B. Miniyar, et al Mini Rev Med Chem, 2013.

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