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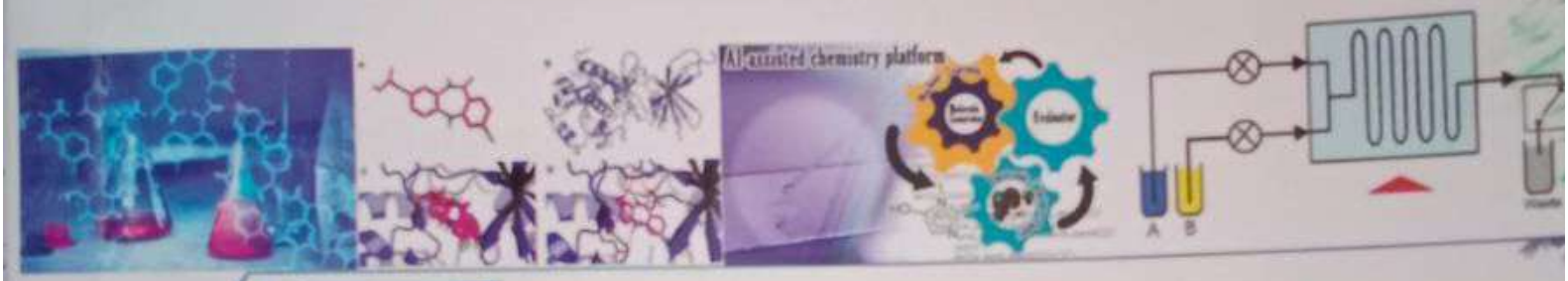

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Synthesis and Cytotoxicity evaluation of Novel 2-[4-(diphenylmethyl) piperazin-1-yl) N-Phenyl acetamide

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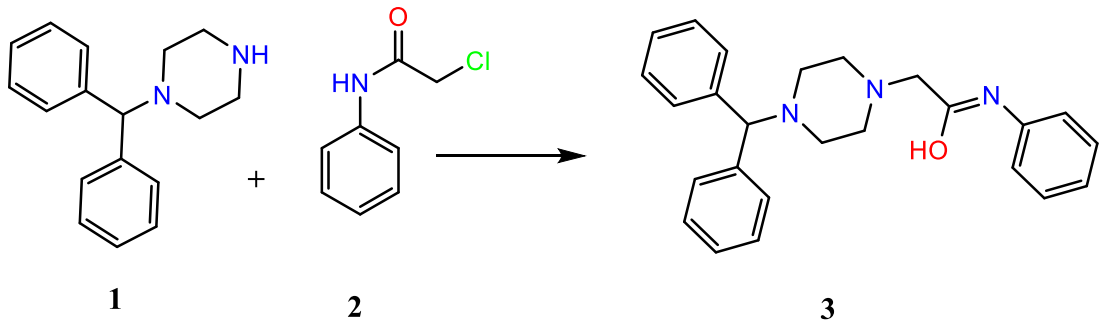
Dimethylenediamine, commonly known as piperazine, is an interesting heterocyclic moiety. It is a constituent of several biological active molecules. The polar nitrogen atoms in the piperazine ring confer bioactivity to molecules and enhance favorable interaction with macro molecules. Piperazines are important class of chemical compounds with a broad spectrum of biological activities viz., Anti-infective, anti-cancer, anti-psychiatry, antidepressant, anticancer, anti-inflammatory and antiviral. Slight changes carried out in the structure of the piperazine derivatives through substitution reactions may facilitate recognizable change in the therapeutic effect of the resultant molecules. Most of the quinoline drugs, such as norflaxacin, ciprofloxacin that have piperazine moiety have shown broad spectrum activity against respiratory, urinary, gastrointestinal tract, skin and soft tissue infection caused by bacteria. Keeping in view of these diverse therapeutic activities of piperazine derivatives, it was hypothesized to synthesize and spectral characterize 2-[4-(diphenylmethyl)piperazin-1-yl)N-Phenyl acetamide (**3**).



1 **2** **3**

Scheme: Synthesis of compound **3**.

The newly synthesized compound (**3**) evaluated for anticancer activity using MTT Cell Proliferation Assay on three different human cancer cell lines namely HeLa (Cervical cancer), A549 (adenocarcinomic human alveolar basal epithelial), MCF-7 (Breast cancer). Along with these cancer cell lines a control i.e. non-cancer cell line HEK-293 (Human embryonic kidney) was used to measure cytoprotective index of the compound to assess its candidature as safe anticancer drug. The compound showed selective anticancer activity on HeLa cell line with IC50 value **6.019±0.336µM** compared to other cell lines. In addition to this it has exhibited prominent Cytoprotective index of **28.9** on HeLa cell lines.