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## Synthesis and *in vitro* evolution of benzimidazole based substituted purine as potential anticancer agents

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In medicinal chemistry, purine motifs have attracted a great deal of research interest due to their preponderance in pharmaceutically indispensable compounds. Substituted purine especially 2, 6-disubstituted purine known to be very important medicinal and pharmaceutical intermediate. benzimidazoles are categorized in the important pharmacophores and privileged sub-structures in medicinal chemistry owing to their involvement as a key component for various biological activities. Therefore, introduction of benzimidazole at C-6 position of 2, 6-dichloropurine is supposed to improve its activity and thereby selectivity. Due to individual importance of purine and benzimidazole in living cells, we will present their synthesis as hybrids of benzimidazole at 6-position of purine and evaluated *in vitro* anticancer activities. Thus, a series of purine/benzimidazole hybrids were prepared by introduction of aromatic, aliphatic and heterocyclic moieties at the 2-position of purine to improve its potency and selectivity. Specifically, these hybrids were substituted with different secondary amines to remarkably increase their activity beyond their normal scope. Synthesized compounds were well characterized by <sup>1</sup>H and <sup>13</sup>C NMR as well as mass spectroscopy. The newly synthesized compounds were screened for *in vitro* anticancer activities against 60 tumor cell lines panel assay. These results open up new opportunities for other biological activities.

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## Quality of clinical trials for selected priority mental and neurological disorders in sub-Saharan Africa: A systematic review

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**Background:** There is a developing consensus on the effectiveness of various interventions for mental disorders in low and middle income countries, and it has been proposed that the main task that remains is to scale up these interventions. In this context we aimed to look at the quality and extent of intervention trials for selected priority mental and neurological disorders in sub-Saharan Africa.

**Methods:** We used Medline, AJOL and Google scholar databases. Randomized or non randomized clinical trials for the treatment of schizophrenia, depression, maternal depression, bipolar disorder and epilepsy/seizure disorders that involve pharmacotherapy, psychotherapy and physical therapy were included. Extensive list of search terms that identified locations, disorders, interventions and study types were employed. The qualities of the trials were appraised using the single component quality assessment of CONSORT-statement and the Jadad scale.

**Results:** From 1136 studies identified, only 34 trials that fulfilled inclusion criteria were used for quality analysis. Most studies were clinical trials of treatments for epilepsy and conducted after 2006. In terms of region, South Africa had the lion's share hosting 22 of the 34 studies. Pharmacotherapeutic interventions (71%), and conducted at a single center (53%) predominated. In terms of methodological quality in relation to the Jadad scale, 82% fulfill criteria for good methodological quality with a score of 3-5. However, the methodological quality according to the CONSORT criteria was more mixed.

**Conclusions:** The overall quality of clinical trials conducted in Sub-Saharan Africa is encouraging despite the limited number. However, important quality limitations remain and have not improved over time. Establishing clinical trial centers in these countries may be one approach to improve quality and quantity of trials.

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