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Aurora Kinase Inhibitors in Target Specific Cancer Treatment

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Commentary

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Targeted therapy is one of the major treatment modalities in medical oncology. Targeted therapy aims to inhibit oncogenic pathways by interfering with target biomolecules. For this reason drug designers have focused on investigation of new targets in order to develop efficient cancer drugs [1]. Aurora kinases are important members of the serine/threonine kinases and three forms of the Aurora kinases have been identified: Aurora-A, Aurora-B, and Aurora-C in human. Especially, Aurora-A and Aurora-B play key roles in mitotic checkpoint activation, chromosome orientation, cell proliferation, cytokinesis, and mitotic spindle formation in cells. Alteration of their expression level is related with mitotic errors and aberrant expression of these enzymes may trigger multiple oncogenic pathways. Therefore, Aurora-A and Aurora-B kinases have been potential targets in new generation cancer drug development research.

To date, several Aurora kinase inhibitors have been develop for cancer treatment and particularly hesperidin, ZM447439, and VX-680 gave significant results in clinical phase studies [2,3]. In my lab, acyl thiourea containing pyrazole derivative compounds were designed and synthesized as Aurora-A and Aurora-B inhibitors. Synthesized pyrazole analogs showed anticancer activity on human breast and bone cancer cells. *In-silico* molecular docking studies showed that pyrazole analogs perturbed proper conformation of Aurora kinases [4]. Therefore, pyrazole derivatives provide significant opportunities for the development of Aurora inhibitors in target specific cancer treatment.

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