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Review article

Aurora kinase inhibitors as potential anticancer agents: Recent advances

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ABSTRACT

Aurora kinases are a family of serine/threonine kinases that play a crucial role in cell proliferation through the regulation of mitotic spindles. These kinases are the regulatory proteins localized in the various phases of the cell cycle and are involved in centrosome maturation, chromosome alignment, chromosomal segregation, and cytokinesis. They have emerged as one of the validated drug targets for anticancer drug discovery as their overexpression has been implicated in the pathogenesis of various carcinomas. Inhibitors of Aurora kinases induce growth inhibition and apoptosis in a variety of tumor cells. Hence, the design and development of Aurora kinase inhibitors have been widely explored in recent years by the scientific community as potential anticancer agents. Various Aurora kinase inhibitors have been under preclinical and clinical investigations as antitumor agents. This review summarizes the recent strategies of various researchers for the design and development of Aurora kinase inhibitors belonging to different structural classes. Their bioactivity, SARs, molecular modelling, and mechanistic studies have also been described. The comprehensive compilation of research work carried out in the field will provide inevitable scope for the design and development of novel drug candidates with better selectivity and efficacy. The review is constructed after the exhaustive research in this discipline and includes the papers from 2011 to 2020.

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