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Synthesis of new spirooxindole-pyrrolothiazoles derivatives: Anti-cancer activity and molecular docking

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Abstract: The 1,3-dipolar cycloadditions of an azomethine ylide generated from isatin and thiazolidinecarboxylic acid to a series of 2,6-*bis*[(*E*)-arylmethylidene]cyclohexanones afforded new di-spiro heterocycles incorporating pyrrolidine and oxindole rings in quantitative yields and chemo-, regio-, and stereoselectively. The newly synthesized compounds were characterized using spectroscopic techniques. Furthermore, the molecular structures of **4a**, **4e**, and **4n** were confirmed by X-ray crystallography. These newly synthesized compounds were screened for their in vitro activity against breast cancer cell line MCF-7 and K562-leukemia. **4k** was found to be the most potent compound of this series in targeting MCF-7 breast cancer cells and K562-leukemia, with IC_{50} values of 15.32