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# Synthesis and preliminary mechanistic evaluation of N-(Substituted-1,3-Benzothiazol-2-yl)-2-(4-Substituted-Piperazin-1-yl) Acetamide derivatives with potent antiproliferative activity on human cancer cell lines

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This lecture will cover synthesis, characterization and cytotoxic activities of some new benzothiazole-piperazine derivatives. Structures of compounds N-(substituted-1,3-benzothiazol-2-yl)-2-(4-substituted-piperazin-1-yl)acetamide derivatives were clarified with IR, $^{1}$H-NMR, $^{13}$C-NMR, mass spectroscopies and elemental analyses. *In vitro* cytotoxic activities of compounds were screened against hepatocellular (HUH-7), breast (MCF-7) and colorectal (HCT-116) cancer cell lines by sulphorhodamine B assay. Based on the $GI_{50}$ values of the compounds, most of the benzothiazole-piperazine derivatives are active against HUH-7, MCF-7 and HCT-116 cancer cell lines. In addition, further investigation of compounds by Hoechst staining and FACS revealed that these compounds cause apoptosis by cell cycle arrest at subG1 phase. On the basis of their high potency in cellular environment, these straightforward benzothiazole-piperazine derivatives may possess potential in the design of more potent compounds for intervention with cancer cell proliferation.

## Biography

Yarim has completed his PhD from Hacettepe University and postdoctoral studies from ETH-Zürich. Professor Yarim has studied anticancer drug design and she has authored several peer-reviewed reports. She has served on numerous review committees for the National Science Foundation in Turkey. She has served on the editorial boards for the *Pharmacologia*. She is a member of the QSAR Society.

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