OMICS Group Conferences
Accelerating Scientific Discovery

3rd World Congress on
Cancer Science & Therapy

October 21-23, 2013 DoubleTree by Hilton Hotel San Francisco Airport, USA

Synthesıs and antıcancer screenıng studıes of benzhydrylpıperazıne derıvatıves

E. Ece Gurdal
Yeditepe University, Turkey

Abstract

This lecture will cover our study on benzhydrylpiperazine derivatives and their cytotoxic activities. Our group prepared fifty one compounds with carboxamide, carbothioamide, benzoyl and sulfonyl moieties. Benzhydrylpiperazine, 4-chlorobenzhydrylpiperazine and 4,4'-difluorobenzhydrylpiperazine were synthesized by reflux of piperazine and suitable benzhydryl chlorides in alkali medium. Target compounds were synthesized with reactions of benzhydrylpiperazine derivatives with suitable isocyanates, isothiocyanates, benzoyl chlorides and sulfonyl chlorides in room temperature with triethylamine. Structures of compounds were clarified with IR, ^{1}H-NMR, ^{13}C-NMR, mass spectroscopies and elemental analyses.

In vitro cytotoxic activities were screened in comparison with camptothecin (positive control) and 5-fluorouracil (reference) by sulphorhodamine B assay against breast cancer (MCF-7), hepatocellular carcinoma (HUH-7) and colorectal carcinoma (HCT-116) cell lines.

Against HUH-7 cell line, in general, 4-chlorobenzhydrylpiperazine derivatives were more potent than other derivatives. The most potent compound against this cell line was *N*-(4-cyanophenyl)-4-[(4-chlorophenyl)(phenyl)methyl]piperazine-1-carboxamide (compound **25**; IC_{50} = 1.29 µM). The most potent compound against MCF-7 cell line was 1-(4-bromobenzoyl)-4-[bis(4-fluorophenyl)methyl]piperazine HCl (compound **36**; IC_{50} = 2.21 µM). The most potent compounds against HCT-116 cell line were *N-tert*-butyl-4-(diphenylmethyl)piperazine-1-carboxamide (compound **2**; IC_{50} = 1.01 µM) and *N*-(4-cyanophenyl)-4-[(4-chlorophenyl)(phenyl)methyl]piperazine-1-carboxamide (compound **25**; IC_{50} = 1.81 µM).

Biography

Dr. Ece Gurdal entered Yeditepe University, Faculty of Pharmacy in 2003 and graduated in 2007. The same year she graduated, she was accepted to the pharmaceutical chemistry doctorate programme and started to work there as a research and teaching assistant. Last year she finished her doctorate studies. She is still working in Yeditepe University as an assistant professor.