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Sigma-2 (σ2) receptor ligands as potential anticancer agents for pancreatic cancer

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Pancreatic cancer is the fourth leading cause of cancer-related mortality amongst all cancers. The overall 5-year survival rate is 6% and the total cost of treatment is estimated to be 4.9 billion dollars per year in the United States. One major obstacle in the treatment of cancer is the development of selective chemotherapeutic agents. Sigma receptors, particularly the sigma-2 subtype, have emerged as an interesting target for the design of treatments for various cancers. They are overexpressed in rapidly proliferating cancer cells. Hence, sigma-2 receptor ligands may represent a platform for chemotherapeutics of pancreatic and other types of cancers. We recently synthesized a series of modified compounds and determined their affinity to various receptors. Binding studies show that compound 23 favorably interacts with sigma-2 receptors (Ki = 2.7 nM). Evaluation of the cytotoxic effects of these compounds on various pancreatic cancer cell lines is ongoing.

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