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# An approach to anti-cancer therapy with multitargeting ligands

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Today the most common target of chemotherapy ligands that aim to avoid cell proliferation is a direct attack on DNA. This focus has a major drawback, which is that the DNA of cancer and healthy cells is the same, meaning that the therapy is not selective and it's necessary to use several different compounds. The epigenetic is aimed at the DNA environment and not a direct attack on DNA. This was the focus of the last contribution, which aim was to synthesize pro-apoptotic molecules that are α,β-unsaturated aryl amides, these compounds are highly selective for thiol-containing compounds, which are abundant in cancer cells. By targeting the DNA environment, cancer cells can be made more sensitive to attack by histone deacetlylase-inhibitors and ornithine decarboxylase-inhibitors. The aim of this contribution was to design a dual targeting molecule that inhibits both ornithine decarboxylase (ODC) and histone deacetylase (HDAC). Actually, we found two molecules that serve this purpose; these molecules are ω-chloroacetyl ornithine and ω-chloroacetyl lysine. These molecules were tested *in silico* and *in vitro*. In both molecules docking clearly showed that the carboxylic moiety is the binding site of ODC while the chloroacetyl moiety is the binding site of HDAC. The *in vitro* studies showed an inhibition constant of 1.5 μM for both ODC and HDAC. The effect of both molecules was determined on three different cell lines: Vero, HeLa, and Hep G2 cells. The results clearly show time-dependent and concentration-dependent inhibition of proliferation of cancer cells without any effect on healthy cells.

## Biography

José G Trujillo-Ferrara, a pioneer in Mexico in the field of Medicinal Chemistry has focused on the rational drug design based on the molecular mechanisms of pathology. Experiments are done *in vitro, in vivo* and *in silico* to predict which compound will have the greatest effect in clinical use. He has authored more than 100 publications and has more than 600 citations. He is a member of the National System of Researchers II and a Board Editor of the *Journal of Enzyme Inhibition and Medicinal Chemistry.* He has been the advisor for 62 students to obtain a scholar degree.

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