UNIVERSITI TEKNOLOGI MARA

SYNTHESIS OF GONIOTHALAMIN AND ANALOGUES/DERIVATIVES AND CYTOTOXICITY ON JURKAT CELL LINES

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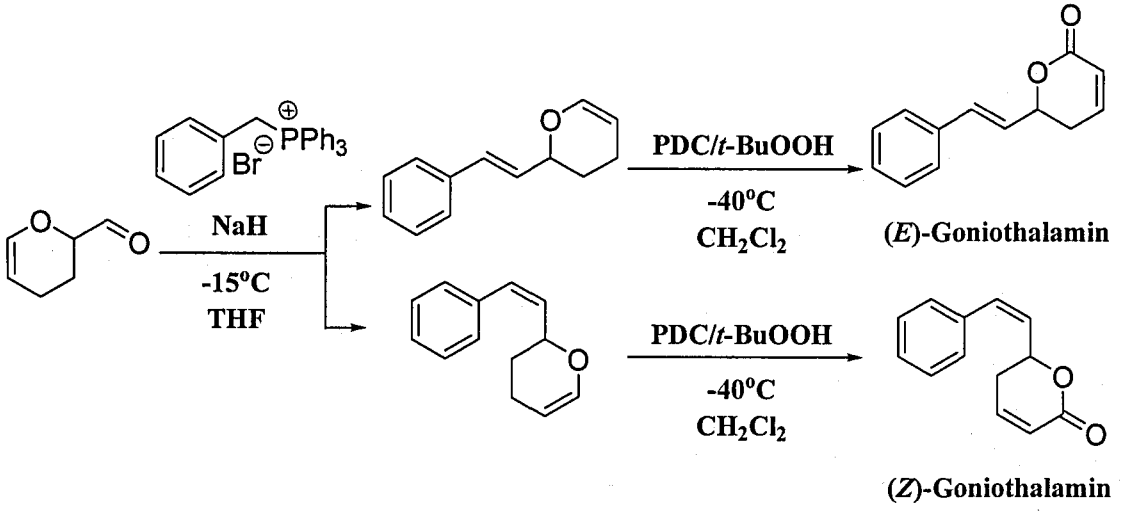
ABSTRACT

Goniothalamin is a natural styryllactone with anti-tumor properties through the induction of apoptosis. Goniothalamin and its analogues/derivatives were simply synthesized from commercially available racemic starting material (3,4-dihydro-2*H*-pyran-2-yl)methanol that was converted in the corresponding aldehyde. Various aryl phosphonium salts were synthesized using microwave irradiation (MW). Wittig reactions between the above mentioned aldehyde and phosphonium salts were performed at -15°C in THF leading to the mixture of (*E*)- and (*Z*)-styrylpyrans. Oxidation of these intermediates in presence of *t*-butyl hydroperoxide (*t*-BuOOH) and pyridinium dichromate (PDC) in CH_2Cl_2 at -40°C led to (*E*)- and (*Z*)-isomers of goniothalamin as well as some analogues/derivatives. When tested on lymphoblastic leukemic T cell Jurkat E6.1 cells, (*Z*)-goniothalamin appeared to be the most active derivative. A Structure-Activity Relationships (SARs) study allowed us to establish the relevant structural features for cytotoxic activity of (*Z*)-goniothalamin and some analogues/derivatives.



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