**Synthesis of novel psoralen analogues and in vitro antitumor activity**

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Psoralens are natural products present in several plant families that are extremely toxic to a wide variety of prokaryotic and eukaryotic organisms. They are potentially active in diseases such as vitiligo, psoriasis, and several types of cancer. Following our interest on this type of compounds 1 four new psoralen analogues were prepared, 1a-1c and 1e.

To synthesize 1a (R = H) the method of Harayama and Ishii was used where the cinnamate was obtained by the Wittig reaction followed by ring closure. Condensation of 1-formyl-2-hydroxycarbazole with diethyl malonate gave 1b which by basic hydrolysis yielded compound 1c. Compound 1d was prepared before. 2 Condensation of the 2-hydroxycarbazole with ethyl acetoacetate gave 1e. The products were characterized by elemental analysis, 1H and 13C NMR. Moreover, the anti-proliferative effect of compounds 1a-1e on human cancer cell lines (MDA-MB 231, HeLa and TCC-SUP) was evaluated. Results suggest that these psoralen analogues possess a potent cytotoxic effect against the cell lines studied. Computational and molecular docking studies are being carried out.

![Chemical structures](image)

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**References**