Synthesis of Vinca alkaloid derivatives having potential antitumor effect

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Vindoline is one of the well-known representatives of the famous *Vinca* alkaloid family and was isolated as a major compound from the leaves of *Catharanthus roseus*. Vindoline and catharanthine are the basic subunits of the dimer alkaloid vinblastine and vincristine that have remarkable cytotoxic effect. These natural compounds along with their semisynthetic analogues are still being used as chemotherapeutic agents in therapy. The basic aim of our research project is to synthetize new *Vinca* alkaloid derivatives by connecting them with various pharmacophore units in order to increase their effectiveness and/or reduce their serious toxicity.

During my work at the research group I performed several experiments starting from vindoline. This monomer has not got anticancer activity in itself, however, it was presumed, that its efficacy could be promoted by linking it to synthetic pharmacophore units. Therefore attempts have been made to couple vindoline with triphenylphosphine, and also with morpholine, piperazine and methylpiperazine using bromocarboxylic acids as linker molecules. The complete evaluation of the biological activities of the new derivatives have not been finished yet. However, some promising results were already observed by the National Institutes of Health (NIH), US, where the anticancer activities were tested on 60 different cell lines *in vitro*.