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## Heterocyclic labelled derivatives of Betulinines

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The lupane type compounds have played a singular role among pentacyclic cytotoxic triterpenoids from the beginning of 21<sup>st</sup> century, mainly for their various biological activities<sup>1</sup>, which include antineoplastic, antiviral, anti-inflammatory, antimicrobial activities and also hepato- and cardioprotective effects. The derivatives of betulin and betulinic acid have been tested on various tumor cells lines for their activity<sup>2</sup>. The heterogeneous family of triterpenoids, including highly oxidized lupane, des-E-lupane, oleanane and others derivatives, posses a significant cytotoxic and antiviral activity and was named Betulinines<sup>3-6</sup>. Betulinines have proved multispectral cytotoxic activity on the panel of 10 cell tumor lines of different histogenetical origin, including multidrug resistance.

Our research group has three main pathways of interest. The first is a chemical path, which is focused on synthesis of new derivatives based on SARS<sup>6</sup>. The second one is a radiochemical path, which is specialized in synthesis of selectively labelled compounds of the most cytotoxic active compounds<sup>7</sup>. Finally, it is a biological path, which tests biological activities of synthesized compounds, investigates of mechanism of action and formulates of SARS conclusions<sup>6</sup>.

During the past years have been synthesized several labelled derivatives, that have been used for investigation of mechanism, labelled by deuterium, tritium, carbon-13, carbon-14 and nitrogen-15. Recent interest of our research is synthesis of heterocyclic labelled derivatives of heterobetulinic, morolic and betulinic acid. Mentioned compound will be studied for their biological activities, especially for antitumor and anti-HIV in cooperation with LEM in Olomouc.

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