

Drug resistance of cancer cells crucially affected expression levels of ABC-transporters

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How is drug resistance of cancer cells affected by ABC-transporters? A new research paper, published in the open access journal *BioDiscovery*, looks at the complex relationship between the second generation of tyrosine kinase inhibitor (TKI) - Dasatinib (DAS), and the expression of ATP-binding cassette (ABC) transporters, ABCB1 and ABCG2, to assess whether these drug transporters might compromise therapeutic effect.

Cancer enabled "targeted" treatment is an effective method with a minimal damage for healthy cells. Targeted therapy brought about a revolution in cancer treatment in the last decades by utilising rationally designed drugs that interfere with specific molecules (molecular targets) essential for proliferation and survival of malignant cells.

While DAS represents excellent choice for the treatment of chronic myeloid leukemia resistant to imatinib, recent laboratory studies suggested that antiproliferative effect of DAS might be significantly reduced when overexpression of the ATP-binding ABC transporters, ABCB1 and ABCG2 comes into the equation.

"Despite the importance of this relationship, it was still unclear whether these drug transporters might compromise [therapeutic effect](#) of DAS in clinic," explains Dr. Petr Mlejnek, Palacky University Olomouc, Czech Republic. "Believing that the drug transporter expression level is a

crucial factor that affects the results and thus may help to explain the existing controversy we decided to study relationship between expression levels of ABCB1 and ABCG2 and cell [resistance](#) to DAS in vitro."

In their study Dr. Petr Mlejnek and his team from the Palacky University Olomouc, Czech Republic observed that the expression level of the studied ABC-transporter is an important factor that affects the cell resistance. While the antiproliferative and pro-apoptotic effects of DAS might be reduced by ABCB1 or ABCG2 overexpression at clinically relevant concentration, the actual effect of the studied ABC transporters on DAS efficiency depends on their expression levels. The lower expression levels of ABC transporters mediate lower resistance. Considering the fact that [expression levels](#) of ABCB1 and ABCG2 transporters are hardly high in clinical samples, their contribution to the overall resistance to DAS is probably low but significant.

More information: Petr Mlejnek et al. Drug resistance of cancer cells is crucially affected by expression levels of ABC-transporters, *BioDiscovery* (2017). [DOI: 10.3897/biodiscovery.20.e11211](https://doi.org/10.3897/biodiscovery.20.e11211)

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