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Mini review

Drug Metabolites and their Effects on the Development of Adverse Reactions:  
Revisiting Lipinski's Rule of Five

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**Drug Metabolites and their Effects on the Development of Adverse Reactions:  
Revisiting Lipinski's Rule of Five**

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**Abstract**

Many studies have shown that toxicities of anticancer drugs and their adverse effects are related to their chemical structure and high molecular weight that may result in a number of metabolites interacting with drug off-target networks. These factors require further attention for advancing cancer treatment and decreasing toxicities caused by the molecular complexity of antineoplastic agents. Providing more target-selective and tolerable cancer therapy with fewer side effects would not only improve patients' compliance, but also would decrease cancer-remission rates. This review presents several antineoplastic agents and their metabolites with molecular weights greater than 500 g/mol, which reportedly cause more than fifteen types of adverse reactions during breast cancer therapy.

**Keywords**

Anticancer drug, metabolites, adverse drug reactions, toxicity and ADME

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