

Inflammation induces changes in the functional expression of ABC transporters: an overview of different models and consequences for drug disposition

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March 07, 2024

Abstract

The ATP-binding cassette (ABC) transporters play a key role in drug pharmacokinetics. These membrane transporters are present in several physiological barriers and they can be a source of pharmacokinetic variability. Changes in ABC transporter expression and functionality may consequently affect drug disposition resulting in different drug exposure. Inflammation, present in several acute and chronic diseases, has been identified as a source of modulation in drug transporter expression leading to variability in drug response. Its regulation may be particularly dangerous for drugs with a narrow therapeutic index. In this context, numerous in vitro and in -vivo models have shown up- or downregulation in the expression and functionality of ABC transporters under inflammatory conditions. Nevertheless, the existence of nonagreed data and the lack of standardization for the models used have led to a more complex interpretation of these data. Thereby, the standardization of study models is crucial to increase the relevance of data. In addition, current data are not sufficient and further studies should be performed to provide new evidence using additional techniques such as mass spectrometry that will give more accurate quantitative information about ABC transporter expression during inflammation.

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