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Flow cytometric evaluation of the effects of 3-bromopyruvate (3BP) and dichloroacetate (DCA) on THP-1 cells: a multiparameter analysis.

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Author information

Abstract

Two human leukemia cells K562 and THP-1, the breast cancer lines MCF-7 and ZR-75-1, and the melanoma line MDA-MB-435S were compared by flowcytometry for their behaviour at increasing levels of 3BP. K562 and THP-1 responded to 3BP by membrane depolarization and increased ROS; MCF-7 and ZR-75-1 showed decreased polarization and low ROS increase; MDA-MB-435S had limited depolarization and no ROS increase. THP-1 cells exposed to a range of 3BP concentrations in combination with DCA showed increase of polarization, slight ROS increase, and weakened nuclear integrity. 3BP and DCA show no synergism, but have complementary destructive effects on THP-1 cells. The data led to the conclusion that the THP-1 cells do not carry a functional membrane monocarboxylate transporter (MCT) or that 3BP circumvents MCT binding and can enter these cells independently.

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