MDR against anticancer drugs- Review

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Abstract:
The resistance of tumors may occurs as a cross-resistance to a whole range of drugs with different structures and cellular targets. This phenomenon is called multiple drug resistance (MDR).


• Poor tumor vascularization.
• The physiological properties of solid tumors that result deficiency in nutrients and oxygen.

Cellular resistance mechanisms:

• Non-transport based cellular MDR mechanisms:
  ✓ Altered activity of specific enzyme systems which can decrease the cytotoxic activity of drugs such as GST and Topoisomerase.
  ✓ Changes in the balance of proteins that control apoptosis, for example mutant p53, Bcl-2, Survivin, CD95, TRAIL and so on.

  • Transport-based classical MDR mechanisms:
    ATP-binding cassette (ABC) transporters that mediate MDR via over expression of ATP-dependent drug efflux pumps and include:
  ✓ P-glycoprotein or MDR1 protein, recently renamed ABCB1.
  ✓ Multidrug resistance-associated protein-1 (MRP1) and its homologes MRP2-6
  ✓ Breast cancer resistance protein (BCRP)

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