Melanosome dynamics and sensitivity of melanoma cells to chemotherapy

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Manipulating the functions of melanosomes--the organelles in pigment-producing cells--may enhance the activity of anticancer drugs used against melanoma, according to a new study published online August 24 in the *Journal of the National Cancer Institute*.

To examine the role of melanosomes in the sensitivity of malignant melanoma to chemotherapeutic agents, Kevin Chen, Ph.D., Vincent Hearing, Ph.D., Michael M. Gottesman, M.D., of the Laboratory of Cell Biology at the National Cancer Institute in Bethesda, Md., and colleagues compared pigmentation and melanosome developmental stage, number, and cellular structures in melanoma cell lines in response to treatment with chemotherapeutic agents.

The authors found that late-stage melanosomes that were damaged and thus could not trap metabolites were toxic to melanoma cells. They also found that melanoma cells that survived cisplatin treatment had more stage II-III functional melanosomes—also known as early melansomes because they have not initiated melanin synthesis—than untreated melanoma cells. In addition, when melanosomes were reverted to relatively early stages, the melanoma cells became more resistant to cisplatin.

"We believe that manipulation of melanosome status either by cytotoxic or by noncytotoxic drugs opens therapeutic avenues and raises the prospect of successfully treating pigment-producing cell-related diseases and, in particular, highly intractable malignant melanomas," the authors

write.

Source: Journal of the National Cancer Institute (news : web)