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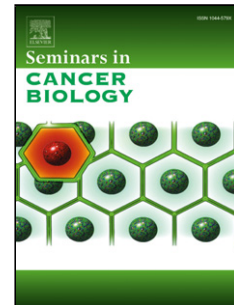
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Author: Marc Diederich Claudia Cerella

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Non-canonical programmed cell death mechanisms triggered by natural compoundsMarc Diederich^{a,*}, Claudia Cerella^b

^a *Department of Pharmacy, College of Pharmacy, Seoul National University, Seoul 151-742, South Korea*

^b *Laboratoire de Biologie Moléculaire et Cellulaire du Cancer, Hôpital Kirchberg, 9, rue Edward Steichen, L-2540 Luxembourg, Luxembourg*

***Corresponding author at:** Department of Pharmacy, College of Pharmacy, Seoul National University, Gwanak-ro, Gwanak-gu, Seoul, 08826, South Korea. Tel.: +82-2-880-8919.

E-mail address: marcdiederich@snu.ac.kr (M. Diederich).

ABSTRACT

Natural compounds are the fundament of pharmacological treatments and more than 50% of all anticancer drugs are of natural origins or at least derived from scaffolds present in Nature. Over the last 25 years, molecular mechanisms triggered by natural anticancer compounds were investigated. Emerging research showed that molecules of natural origins are useful for both preventive and therapeutic purposes by targeting essential hallmarks and enabling characteristics described by Hanahan and Weinberg. Moreover, natural compounds were able to change the differentiation status of selected cell types. One of the earliest response of cells treated by pharmacologically active compounds is the change of its morphology leading to ultra-structural perturbations: changes in membrane composition, cytoskeleton integrity, alterations of the endoplasmic reticulum, mitochondria and of the nucleus lead to formation of morphological alterations that are a characteristic of both compound and cancer type preceding cell death.

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