

Phytol and heptacosane: the two major components of *Euphorbia intisy* essential oil with biological activities in drug resistant leukemia cell.

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Multidrug resistance has always been a great problem to successfully treat diseases as cancer. Some natural compounds as Essential oils (EOs) are characterized by multiple pharmacological activities including those anticancer. We have previously observed that *Euphorbia intisy* (Euphorbiaceae) essential oil showed antitumor effects on an acute myeloid leukemia cell line HL-60, and on its MDR variant HL-60R, affecting two different targets: NF- κ B pathway and P-gp function. On the contrary of many toxic P-gp inhibitors like verapamil, EO has a low effect on cell death, however, the phytocomplex has the ability to be multitarget due to the presence of numerous substances that synergize, but being extracted from the plant, it is difficult to reproduce. For this reason, we identified the EO compounds to which the mechanism of action could be ascribed: phytol (terpene) and heptacosane (hydrocarbon). Phytol caused a strong decrease of NF- κ B activity and consequently of its targets expression. Heptacosane and phytol seem to behave like verapamil on P-gp function, promoting an intracellular accumulation of doxorubicin. These results highlighted the idea that these major components of *E. intisy* EOs can act as adjuvant in drug resistant diseases.