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Novel chemosensitizing effects for crocin and flavocoxid in a mouse eac-tumor model: cellular and molecular triggers

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Purpose: We evaluated the sole and doxorubicin (doxo)-combined chemotherapeutic and survival-effects of the phytomedicines; flavocoxid (flvcox) and crocin, using a mouse-Ehrlich-Ascites-Carcinoma-solid-tumor-model (EAC).

Methods: We analyzed tumor-burden, animal-survival, redox status, and levels of mediators for tumorigenesis/inflammation, host-immunity (serum-TNF-α and -IL-10) and tumor-apoptosis (Caspase-3-expression).

Results: EAC-bearing-mice had significantly-raised serum-TNF-α and tumor-lipid-peroxide (MDA) levels, but reduced serum-IL-10 levels and total-serum antioxidant-capacity (TAC), thereby inducing animal-fatalities after 3-weeks. Crocin administration significantly-shrank tumor-mass, -reduced tumor-MDA and serum-TNF-α levels; but -raised serum-IL-10, -TAC and tumor-caspase-3-levels; ultimately augmenting animal-survival. Furthermore, crocin appreciably optimized all responses to doxo to markedly extend animal-survival. Flvcox had similar but less-prominent effects than crocin.

Conclusions: Results reveal that: 1)-Doxo elicits superb cytotoxicity but lesser cytokine-, redox- and animal rescuing-profiles; 2)-Crocin and flvcox achieve significant-sole and -combined chemotherapeutic and animal-survival effects by modifying cytokine levels, optimizing redox-potential and promoting tumor apoptosis.

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