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Selective Killing Natural Products and Drugs in Oral Cancer Treatments

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Most cancer drugs are effective to kill cancer cells but also harm normal cells. Drugs and natural products with the selective killing effect may be helpful to solve this problem.

The side effects of many anticancer drugs are partly derived from its damage to both cancer and normal cells without selection. This problem raises the need of anticancer drug discovery with the selective killing effect.

Recently, several drugs with reactive oxygen species (ROS)-modulating effects have reported to be selective killing against cancer cells [1,2]. It may be partly explained by the concept that normal cells tolerate a certain level of drugs-induced ROS but it may exceed the ROS threshold in cancer cells, leading to cancer cell death but less harmful to normal cells [3,4].

Many ROS-generating natural products and drugs had been reported but their selective killing effects were sometimes not investigated [5-7]. It was warranted for further investigation about its possible selective killing effects. In contrast, it is noted that the ROS-generating natural products and drugs are not always displaying the selective killing effect.

Some antioxidants were reported to have dual roles for cell survival and cell killing in respective to different dosages [8], i.e., it displayed the survival effects at physiologic doses and the deleterious effects at high doses. In case of grape seed extracts, the famous natural products with an antioxidant property, it was found to be healthy to normal oral cells but inhibited the proliferation of oral cancer Ca9-22 cells at high doses [9]. Accordingly, the selective killing effects of antioxidants may be dose-dependent and/or cancer cell type-dependent.

Thus, the drugs and natural products with suitable ROS modulating effect may be the anticancer drug candidates with selective killing.

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