

Dental Research and Management

Editorial ISSN: 2572-6978

Selective Killing Natural Products and Drugs in Oral Cancer Treatments

Hsueh-Wei Chang 1-3*

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.

Funding Support

This work was supported by funds of the Ministry of Science and Technology (MOST 104-2320-B-037-013-MY3), the Kaohsiung Medical University "Aim for the Top Universities Grant, grant No. KMU-TP103A33", the Health and welfare surcharge of tobacco products, the Ministry of Health and Welfare, Taiwan, Republic of China (MOHW104-TDU-B-212-124-003)

References

- Chiu CC, Haung JW, Chang FR, Huang KJ, Huang HM, etal. Golden berry-derived 4betahydroxywithanolide E for selectively killing oral cancer cells by generating ros, DNA damage, and apoptotic pathways (2013) PLoS One 8:e64739.
- Suzuki-Karasaki Y, Suzuki-Karasaki M, Uchida M, Ochiai T. Depolarization controls trailsensitization and tumor-selective killing of cancer cells: Crosstalk with ros (2014) Front Oncol 4:128.
- Trachootham D, Alexandre J, Huang P. Targeting cancer cells by ros-mediated mechanisms: A radical therapeutic approach? (2009) Nat Rev Drug Discov 8:579-91.
- Gupte A, Mumper RJ. Elevated copper and oxidative stress in cancer cells as a target for cancer treatment (2009) Cancer Treat Rev 35:32-46.
- Yen YH, Farooqi AA, Li KT, Butt G, Tang JY, et al. Methanolic extracts of Solieria robusta inhibits proliferation of oral cancer ca9-22 cells via apoptosis and oxidative stress (2014) Molecules 19:18721-18732.
- Yeh CC, Tseng CN, Yang JI, Huang HW, Fang Y, etal. Antiproliferation and induction of apoptosis in ca9-22 oral cancer cells by ethanolic extract of Gracilaria tenuistipitata (2012) Molecules 17:10916-10927.



Affiliation:

¹Department of Biomedical Science and Environmental Biology, Kaohsiung Medical University, Kaohsiung, Taiwan

²Cancer Center, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

³Research Center of Excellence for Environmental Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

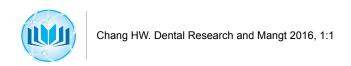
*Corresponding author:

Hsueh-Wei Chang, Department of Biomedical Science and Environmental Biology, Kaohsiung Medical University, Kaohsiung, Taiwan E-mail: changhw@kmu.edu.tw

Citation: Chang HW (2016) Selective Killing Natural Products and Drugs in Oral Cancer Treatments. Dent Res Mang. 1: 1-2

Received: July 26, 2016 Accepted: July 28, 2016 Published: Aug 03, 2016

Copyright: © 2016 Chang HW. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



- Yen CY, Chiu CC, Haung RW, Yeh CC, Huang KJ, etal. Antiproliferative effects of goniothalamin on ca9-22 oral cancer cells through apoptosis; DNA damage and ros induction (2012) Mutat Res 747:253-258.
- Bouayed J, Bohn T. Exogenous antioxidants double-edged swords in cellular redox state: Health beneficial effects at physiologic doses
- versus deleterious effects at high doses (2010) Oxid Med Cell Longev 3:228-237.
- Yen CY, Hou MF, Yang ZW, Tang JY, Li KT, et al. Concentration effects of grape seed extracts in anti-oral cancer cells involving differential apoptosis, oxidative stress, and DNA damage (2015) BMC Complement Altern Med 15:94.

Citation: Chang HW (2016) Selective Killing Natural Products and Drugs in Oral Cancer Treatments. Dent Res Mang. 1: 1-2