A MODIFICATION METHOD FOR EVALUATION THE IC50 FOR CHEMOTHERAPEUTIC EFFICACY ON 3D TUMOR SPHEROID

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Abstract- The in vitro evaluation of chemotherapeutic agents using cellular monolayers (2D) cultured in a flat-bottomed plastic culture dish doesn't give the predictive responses similar to that found in vivo investigations, because of the lacking of cell–cell and cell microenvironment interactions in cellular drug responses. Hence, there are strong needs for the development of the in vitro 3D tumor models that closely mimic the in vivo microenvironment interactions with the surrounding cells, growth factors, and other biomolecules. To date, the sulforhodamine B assay still the most widely technique used for two dimensional (2D) cytotoxicity screening of the chemotherapeutic agents. Herein, this study has been optimized for establishing modification method based on growing the human tumor cell lines as threedimensional culture (3D) tumor spheroids using hanging drop technique in flat-bottomed 96-well plates to make tumor spheroid into every well of plate. Here we study the differences biological responses of human colon cancer HCT116 cell line cultured as three dimensional (3D) spheroids compared to monolayers to doxorubicin which is used in treatment of a wide variety of cancers to compare the IC50% values between two types of culture.

Key Words- Tumor spheroids, Chemotherapeutic agents, Modification method for evaluation of IC50.