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Efficacy, safety, economy and regulatory consequences of antiviral agents

There are three primary determinants of the success for the development of any therapeutic new drugs: Efficacy, Safety and Economy without an exception. The first two priorities determine the usefulness and the third determines affordability and beneficial to a large number of people and yet at reasonable cost and financial return to the pharmaceutical developers. Hundreds of thousands of scientists are searching for potent and effective compounds and equally important to pursue low toxicity and tolerable side effects. For anti-viral agents such as AIDS therapy, several unique aspects need to be considered: The known etiological pathogens and its life cycle steps for targeting, such as HIV; HIV has high mutation rates that resulted in drug resistance; There are only very limited and costly animal models available so that need to stress quantitative and sensitive *in vitro* evaluation of candidate compounds for preclinical development and clinical follow-ups. Many of the above conditions have been met, but many others remain difficult and pose uncertainties. For today's discussion, the author would like to focus on the following questions: Why we need drug combinations such as cocktails for antivirals? How to design and quantitatively determine and rank them with computerized simulations? Are the currently approved anti-HIV combination patents and their FDA approved anti-HIV products really represent the better or the best therapeutic products? All the above questions will be discussed and answered by the unified theory of the median-effect equation of the mass-action law, the combination-index theorem and their computerized simulations using the CompuSyn software.

Biography

Ting-Chao Chou has received his PhD in Pharmacology from Yale University and Postdoctoral Fellowship from Johns Hopkins University School of Medicine. He has joined Memorial Sloan-Kettering Cancer Center (MSKCC) and became a Member and Professor of Pharmacology at Cornell University Graduate School of Medical Sciences in 1988. He is an Honorary Professor of Chinese Academy of Medical Sciences and Visiting Professor at five universities. He has published 444 papers with 23,817 citations (Google Scholar) with h-index of 67. He has introduced The Median-Effect Theory of the Mass-Action Law (1976) and Co-Developed the Combination Index Theorem, CalcuSyn and CompuSyn software. His theoretical paper introducing the CI method and software has been cited 4,648 times in over 711 bio-medical journals. He is an Inventor/Co-Inventor of 39 US Patents and Founder & President of PD Science LLC, USA.

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