

CPH Seminar in Precision Medicine

“The Potential of Traditional Chinese Medicine in Balancing Anti-aging and Anti-tumor”

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Aging and tumorigenesis processes are conflicting, yet share similar molecular mechanisms. It has been shown that enhanced expression of tumor suppressor p53 and telomerase (TERT) produced a systemic delay in aging, suggesting that the balance between aging and tumor at a higher level (super-balance) would benefit the organism with tumor-free longevity. This perspective reminded us about the balance between ‘Yin’ and ‘Yang’ in traditional Chinese medicine. Based on this perspective, we established a high throughput screen to identify the activity in traditional Chinese medicinal plants for induction of p53 and TERT. Yunnan province is famous for its biodiversity and abundant natural resources, which greatly facilitate our screen. After testing the extract from about 400 medicinal plants, we identified 7 plants that could activate p53 in wild type MEFs without obvious cytotoxicity. Among them, we identified one medicinal plant that significantly suppressed the growth of A549 and HT29 tumor cells in a dose dependent manner, while the growth of wild type MEF cells was mostly unaffected. Interestingly, we also found that this tumor-specific inhibition activity was co-purified with the activity of stimulating TERT. Our study provided a new insight into the methodology of dissecting the action of traditional Chinese medicine in balancing anti-tumor and anti-aging.

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