

Synergistic effect of anti-angiogenic herbal composition (Meta-X) in combination with radiotherapy on the inhibition of tumor growth

Young-Soo Han¹, Jie-Young Song¹, Yeon-Sook Yoon¹, Joon-Sik Kim², Byung-Young Park², Hee-Suk Lee², and Min-Young Kim^{2,*}

¹Korea Institute of Radiological and Medical Sciences (KIRAMS),
215-4 Gongneung-Dong, Nowon-Gu, Seoul, Korea, ²AngioLab, Inc

*Correspondence: mykim@angio-lab.co.kr

Background

Anti-angiogenic composition called Meta-X was made from herbal medicines that are currently used oral drugs for other indications. We examined biochemical properties of Meta-X, and synergistic effect of Meta-X combined with irradiation on the inhibition of tumor growth.

Methods and Results

1) Anti-angiogenic activity of Meta-X was confirmed by mouse Matrigel model. A 0.4 ml portion of Matrigel mixed with each of 50 ng/ml of basic fibroblast growth factor (bFGF) and 50 units/ml of heparin was implanted to C57BL/6 female mice of 6 week-old by subcutaneous injection. After 4 days, the level of hemoglobin in Matrigel removed from excised skin was measured. The hemoglobin level of Meta-X treated group was remarkably reduced as compared with that of control group. 2) 10 µg/ml of each herbal components of Meta-X had inhibitory effects on protein tyrosine kinase (PTK) activity using VEGF-treated HUVEC lysate. And, Meta-X also showed inhibitory effects on the activities of matrix metalloproteinases (MMPs), which play important role in angiogenesis and metastasis. 3) To investigate effects of Meta-X combined with radiotherapy on tumor growth, Lewis lung carcinoma (LLC)-inoculated mice were used. Irradiation, 5 Gy x 3, was given on day 4, 5, and 6. For Meta-X treated group, 0.2 mg of dose was orally administered everyday after LLC was inoculated into mice. Combined treatment of irradiation with Meta-X enhanced the inhibitory effect on tumor growth (Fig. 1).

Conclusion

Anti-angiogenic Meta-X had inhibitory effects on both PTK and MMP activity which are important for cell proliferation and angiogenesis. Combined treatment of irradiation with Meta-X had synergistic effect on the inhibition of tumor growth. Since the safety is verified, Meta-X can be administered to cancer patients as an adjuvant or combination therapy.

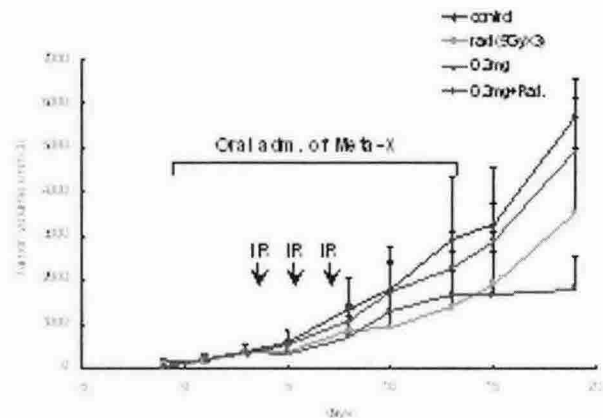


Fig. 1 Effect of Meta-X in combination with irradiation on tumor growth

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