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# Ampi-109, a novel Vitamin D analog for androgen-insensitive prostate and renal cancer

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## Abstract

Non-classical properties of 1α, 25-dihydroxyvitamin $D_3$ (1, 25(OH) $_{2D3}$), the vitamin D hormone includes inhibition of proliferation and differentiation of malignant cells raising its potential as a cancer therapeutic agent. But, therapeutic use of 1, 25(OH) $_{2D3}$ in various cancers has been limited by the risk of toxicity related to hypercalcemia and hypercalciuria at clinically useful doses, thereby setting the ground for developing 1, 25(OH) $_{2D3}$-analogs with low toxicity and potent anti-proliferative activity. Our laboratory has developed AMPI-109, a novel alkylating analog of 1, 25(OH) $_{2D3}$. We observed that AMPI-109 is a significantly stronger anti-proliferative agent than 1, 25(OH) $_{2D3}$ in several prostate and renal cancer cells. But, AMPI-109 did not inhibit the growth of normal prostate and renal cells. We noted that AMPI-109 is a significantly superior inhibitor of renal cancer cell growth than afinitor, axitinib, sorafenib and sunitinib, the currently approved drugs for renal cell carcinoma. Most significantly, AMPI-109 strongly inhibited tumor-growth in mouse models of human androgen-insensitive prostate and renal cancers, demonstrating the potential of AMPI-109 as a therapeutic agent in these malignancies. AMPI-109 was initially developed as an affinity alkylating agent for nuclear vitamin D receptor, the transcriptional factor responsible for the cellular actions of $1,25(OH)_2D_3$. But, our recent studies demonstrate that the anti-proliferative action of AMPI-109 is independent of VDR in prostate and kidney cancer cells, setting AMPI-109 apart from all known analogs of $1,25(OH)_2D_3$. In this presentation we will delineate these results and discuss the potential of AMPI-109 as an effective and safe therapeutic agent for androgen-insensitive prostate and renal cancers.

## Biography

Rahul Ray is a Professor of Medicine at Boston University School of Medicine. He is an authority in the structure-function and cancer therapeutic areas of the vitamin D endocrine system. He has received numerous extra-mural grants and contracts for his research and four awarded patents. Dr. Ray has served as a member in several National Institutes of Health Study Sections and he is an editorial board member of steroid hormone-related journals.