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**Display Settings:** AbstractCancer Invest. 2000;18(7):664-9.**A medical hypothesis: phosphorus balance and prostate cancer.**Kapur S.

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**Abstract**

Over the last three decades the mortality rate for prostatic carcinoma has steadily increased. Carcinoma of prostate (CaP), the most common malignancy in men, is also the second most common cause of cancer deaths in men. However, few epidemiologic studies have been done, and there are scant clues to the etiology/pathogenesis of CaP. As treatment failures for advanced carcinoma continue to frustrate clinicians, more emphasis has recently been focused on strategies to prevent invasive CaP. Prostatic hyperplasia is a universal phenomenon in aging men. Mechanism and signals causing this growth are not understood. Thus, prostatic diseases affect men over the age of 45 and increase in frequency with age so that by the eighth decade more than 90% of men have benign prostatic hyperplasia, of which some progress to CaP. Data from several studies support that higher levels of active metabolite of vitamin D, 1,25-(OH)2-D, reduce the risk of prostatic hyperplasia and CaP. Men with high serum levels of 1,25-(OH)2-D have a reduced risk of poorly differentiated and clinically advanced CaP. Receptor for vitamin D has been reported in both normal and cancer prostate cells. 1,25-(OH)2-D inhibits proliferation and induces differentiation of normal and neoplastic cells. Hypercalcemic activity of 1,25-(OH)2-D or its analogues, however, thwart their use for therapy in humans. 1,25-(OH)2-D also has an established role in phosphorus homeostasis. Low dietary intake of phosphorus leads to an increase in serum concentration of 1,25-(OH)2-D. In addition, dietary fructose reduces plasma phosphate levels by 30 to 50% for more than 3 hr due to a rapid shift of phosphate from extracellular to intracellular compartment. Fruit intake has been shown to be associated with reduced risk of CaP, particularly the advanced type. Put together, these observations support that dietary determinants of hypophosphatemia, leading to increased plasma levels of 1,25-(OH)2-D, could reduce the risk of aging men to develop prostatic diseases, both benign prostatic hyperplasia and CaP.

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