

## Sunshine and Vitamin D Reduce the Risk Of Cancer

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Cancer is one the major cause of death in the developed nation. Sunshine and Vitamin D. are very much correlated, for this reason vitamin D is known as "sunshine vitamin" because sun light helped the body to create the vitamin D. Epidemiological and basic science research suggest that vitamin D as preventive and therapeutic cancer agent. It is also suggested that vitamin D deficiency may predispose some to the occurrence of a number of type of cancer and increase the likelihood of numerous complication known to occur in cancer patients. Breast, colon, endometrial, esophageal, and ovarian was correlated to the solar UV-B radiation (sun exposure).

**Key Words:** VitaminD, Cancer, Sunshine.

### INTRODUCTION

Cancer is a disease in which there is an uncontrolled multiplication and spread of abnormal form of the body's own cell. Cancer or neoplasm is the appearance of tumor. A tumor is abnormal mass because the tumor cell is not governed by low of growth. The majority of vitamin D is derived from sunlight exposure<sup>1</sup>, and it is also reported that 80-90% of vitamin D is stored in the body which is obtained from sunlight<sup>2</sup>. It is estimated that 1700 to 23000 Americans died prematurely each year due to insufficient of vitamin D<sup>3</sup>. Vitamin D cuts the risk of several types of cancer by 60% , over all for older women. For this reason American Medical women association advice that women over age 50 should take 800-1000 IU vitamin D daily<sup>4</sup>. The sun exposure (UV-B radiation) protect total 16 types of cancer primarily epithelial (pertaining to the surface) cancer of the digestive and reproductive systems<sup>5</sup>. Six type of cancer like breast, colon, endometrial, esophageal, ovarian and non-Hodgkin's lymphoma were correlated to the solar UV-B radiation. Roswell Park Cancer Institute (RPCI) recently initiated a clinical trial of high dose calcitriol (vitamin D) replacement in individuals with high risk of lungs cancer. According to the RPCI, vitamin D as a potential therapeutic agent in multiple type of cancer.

#### Skin Cancer

Vitamin D, produced when skin is exposed to ultraviolet radiation (whether from the sun) as

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well as from supplementation with cholecalciferol, may help cancer patients. The production of vitamin D which protect against free radical and DNA damage in the body<sup>6</sup>. The people with black skin need more time under the sun to generate vitamin D compare to white skin because dark skin pigmentation block the ultraviolet radiation.

- Basal cell carcinoma is the most common form of skin cancer .It forms small, fleshy lumps or lumps on hands, and neck. Cancer mainly originated from the lowest layer of the epidermis. It mainly occurs in man who spends a great deal of time out door.

- Squamous cell carcinomas mainly affect the people who sunburn easily, than poorly and have blue eye and red or blond hair. These are developed from actinic keratoses and can metastasise if left untreated<sup>7</sup>.

- Malignant melanoma is the recent form of skin cancer. It originated in the form of melanocyte, which is responsible for producing skin cancer or pigment known as melanin. Since the melanin in dark skin protect against skin cancer, Malignant melanoma metastasizes readily and is fatal if not caught in time<sup>8</sup> as it responds poorly to conventional therapy.

People with red hair, increase the photosensitivity and produce the skin cancer<sup>9</sup>. When person affected by skin cancer, then

the colors of the skin varies from area of another part and diameter of the skin is larger than 6 mm. Up to 200 to 400 I.U per day vitamin D is insufficient' to reduce the risk of cancer. The risk of vitamin D sensitive cancer can be reduced, when 600 to 1000 I.U, vitamin taken<sup>10</sup>. Vitamin D supply is manufactured in most of the body by the action of UVB rays on the lipid on the skin. Vitamin D from the sunlight exposure may be associated with lower risk of fatal breast cancer and difference in ultraviolet light reaching the united states population may account for the striking regional difference in breast cancer mortality. The risk of breast and colon cancer is increased in case of low blood level of vitamin D<sup>11</sup> and low blood level of vitamin D also accelerate the growth of melanoma<sup>12</sup>.

#### **Breast Cancer**

In the western world breast cancer is the most common. Heredity is the major factor which causes the breast cancer. It is also noted that breast cancer mortality rate also follow geographic distribution in United State like as colon cancer<sup>13</sup>. It is intensively explored by scientists that of vitamin D and vitamin D supplement is useful for prevention and treatment or reduce the risk of breast cancer<sup>14</sup>. Higher calcium and vitamin D intake will reduce the risk of colonic and mammary cancer<sup>15</sup>. It is also proved that vitamin D is not a cure for all and should never be used as the main treatment for cancer but proper amount of vitamin D may help for fight against breast cancer. It is also reported that the most active form of vitamin D3 significantly reduced the growth of breast cancer in an animal model<sup>16</sup>. According to Dr. Edward Giovannucci, consuming 2000 IU or more per day may provide optimal protection against cancer<sup>17</sup>. In 1990's, a group of scientists from the University of California at San Diego provided that in United States (women) half as likely to die from breast cancer as were women who lived in less sunny regions. These scientists look that women who lived in the sunniest regions were three times less likely to develop breast cancer than were the women who lived in regions without as much sun. Higher intake of vitamin D3 also reduces breast cancer by protecting against the carcinogenic effects of a high fat diet.

#### **Colon Cancer**

In the western world (US), colon cancer is the one of the second most common cancer. The 50% risk of colorectal cancer can be reduced, when individual vitamin D intake of 1000 IU or with serum vitamin D (25-hydroxyvitamin D) levels of 33 nanograms per milliliter (ng/mL) taken<sup>18</sup>. Many studies have documented significant inverse associations of serum 25-hydroxyvitamin D<sub>3</sub> [25(OH)D<sub>3</sub>] concentrations with the risk of colorectal cancer<sup>19</sup>. More than 20 years ago the scientist were discovered that possible importance of vitamin D for preventing colon cancer. In 1980, Cedric and Frank Garland, while at Johns Hopkins University, reported that colon cancer is significantly less in those who live in sunny area. In 2003, researchers at Dartmouth confirmed that deficiencies of both vitamin D and calcium were involved in the reoccurrence of colon polyps, a condition known to lead to colon cancer<sup>20</sup>. In the year 2005 Harvard Medical School conducted epidemiological review, where they described that vitamin D's have protective effects against colorectal cancer and noted that typical dietary intake of 200-400 IU per day is probably too low to confer appreciable benefits<sup>21</sup>. According to Cedric and Frank Garland, vitamin D reduces the risk of colon cancer in sunny area compared to dark area<sup>22</sup>.

#### **Lung cancer**

In united state of America lungs cancer is the major cause of death not only in man, women are also suffer by it<sup>23</sup>. Lungs cancer kill more people compare to any other cancer. It is also reported that the consumption of vitamin D can improve the lungs cancer very faster compared with the person who are not consuming vitamin D<sup>24</sup>. It is observed that lung carcinogenesis can be inhibited by 1-alpha, 25-dihydroxyvitamin D<sub>3</sub>. It is examined that 1-alpha, 25-dihydroxyvitamin D<sub>3</sub> (1,25D) and 9-cis retinoic acid alone and in combination, for their potential to inhibit carcinogen (NNK)-induced lung carcinogenesis<sup>25</sup>.

#### **Prostate Cancer**

Prostate cancer which is the second leading cause of cancer among the man. In man prostate cancer moderately increases because

of body weight and body size <sup>26</sup>. In every year prostate cancer kills, 3100 Americans. Many experts also tell that vitamin D should not be taken for prostate cancer but scientists also suggest that proper amount of vitamin D<sub>3</sub> may help to fight against prostate cancer because 25-dihydroxyvitamin D<sub>3</sub> (1,25-V<sub>D</sub>), inhibits the function of protease enzymes which are involved in tumor invasion <sup>27</sup>. It is also reported that development of prostate cancer in men at an earlier age with low UV exposure than in those with higher exposure <sup>28</sup>. In 1995 Miller and colleagues showed that activated vitamin D (calcitriol) inhibited the growth of four of seven prostatic carcinoma cell lines. Cancer researchers at a major university seemed to be saying that cholecalciferol (plain vitamin D<sub>3</sub>) may be useful in preventing and treating prostate cancer. In the last year researchers examined the relationship between sun exposure and prostate cancer. Another study also observed in the year 2005, that prostate-specific antigen (PSA) is responsible for prostate cancer. Investigator examined on man who had treated for prostate cancer supplemented with 2000 IU daily of vitamin D. In nine patients PSA level decreased after vitamin D supplementation begins. It is also observed that vitamin D also benefits for the patient whose prostate cancer has metastasized to the bone. So vitamin D related to therapies in prostate cancer <sup>29</sup> and vitamin D has promise as a therapeutic agent because 1,25(OH)<sub>2</sub>D has been shown to inhibit the proliferation and metastasis of both prostate cancer cells <sup>30</sup>.

## CONCLUSION

Recently, the new Cancer Research scientist community is being emphasized the need of exposure to the sun light solar ultraviolet B (UVB) rays and also adequate supplement dietary vitamin D<sub>3</sub> and calcium daily diet for marked reduction of cancer incidence risk (skin cancer and other cancer) in the human community. As per the research observation so far, it is suggested that not to expose more time in sunshine by fair skin persons due to more risk of skin cancer. It is also recommended that the time required for exposure to the sun is probably 15-30 minutes per day with at least and sun face exposure in the middle attitude in the summer. Due to the unavailability in various seasons, it is advised to provide dietary supplement, fortified fruits (milk,

orange juice etc.) and various type of fishes. At least but not the least, the sunshine vitamin with the skin always maintains its elegance with minimal risk of cancer. For the treatment of various type of cancer, sunshine and vitamin D have yet to achieve the success, for this reason vitamin D and sunshine are the most effective medicine against cancer. It is suggested that the exposure to the sunshine regularly in our routine life style leads to, minimize the risk of various types of cancer.

## REFERENCES

1. Hoosick M. F.. *Am. J. Clin. Nutr.* 1995 , 61 (*Suppl.* 3); 638S-645S.
2. Shearer MJ, *Proc Nutr Soc.* 1997 Nov , 56(3); 915-37.
3. Grant WB, *Cancer.* 2002b ,94 ; 1867-75.
4. Available at :[http://today.reuter.co.uk/news/news/article.asp?type=health&newsID=20051117t0504007\\_01\\_CC718202\\_RTRIDST\\_O\\_HEALTH-VITAMIN-DC.XML](http://today.reuter.co.uk/news/news/article.asp?type=health&newsID=20051117t0504007_01_CC718202_RTRIDST_O_HEALTH-VITAMIN-DC.XML). Assessed 2005, November 17.
5. Grant WB, *Cancer.* 2002b ,94; 1867-75.
6. Jablonski NG, *J Hum Evol.* 2000 , 39 ; 57-106.
7. Hacker SM, Flowers FP. *Postgraduate Medicine.* 1993 , 93 , 115-26.
8. Lee JAH, *Photochem photobiol* 1989 , 50 ; 493-96 .
9. Ichii-Jones F, Lear JT, Heagerty AH, Smith AG, Hutchinson PE, Osborne J, Bowers B, Jones PW, Davies E, Ollier WE, Thomson W, Yengi L, Bath J, Fryer AA, Strange RC.. 1998 Aug , 111 (2) ; 218-21.
10. Tuohimaa P, Tenkanen L, Ahonen M.. *Int j Cancer.* 2004 , 108 ; 104-8.
11. Martinez ME, Willett WC. *Cancer Epidemiol Biomarkers Prev.* 1998 ,7 ; 163-8.
12. Ainsleigh HG.. *Prev Med.* 1993 , 22 ; 132-40.
13. Garland C, Shekelle RB, Barrett-Connor E, Criqui MH, Rossoff AH, Paul O.. *Lancet.* 1985,1 ; 307-309.
14. Shin MH, Holmes MD, Hankinson SE, et al, *J Natl Cancer Inst.* 2002, 94 ; 1301.
15. Xue L, Lipkin M, Newmark H, Wang J., *J Natl Can Inst.* 1999, 91 ; 176-181.
16. Wood AW, Chang RL, Huang M-T., *Biochem Biophys Res Comm.* 1985, 130 ; 924.
17. Randy Hartnell and Craig Weatherby , *Friday, June 2005, 3 ; 27.*
18. Garland C, Shekelle RB, Barrett-Connor E, Criqui MH, Rossoff AH, Paul O.. *Lancet.* 1985 , 1 ; 307-9.
19. Garland CF, Comstock GW, Garland FC, 1989 , 2 ; 1176.
20. Hartman TJ , Albert PS, Snyder K, *Nutr* 2005 Feb , 135(2) , 252-9.
21. Giovannucci E . 2006 Jan, 22(1) ; 24-9.
22. Garland CF, Garland FC. *Int J E pidermio.* 1980 , 9 ; 227-31.

23. Edward F. Patz, Philip C. Goodman, and Gerold Bepler, The New England journal of medicine.2000Nov , 343 ; 1627-1633.
24. Zhou W, Suk R, Liu G, 2005 oct;14(10); 2303-9.
25. Mernitz, H., Smith, D., Wood, R., Russell, R., Wang, X. 2007. International Journal of Cancer. 2007 Jan 4 , 120 ; 1402-1407.
26. Robert J, Dallas R, Dorota M . Cancer Epidemiology ,Biomarkers and prevention . 2003 Dec, 12 ; 1417-1421.
27. Robsahm TE, Tretli S, Dahlback A, Moan J. Cancer Causes Control . 2004, 15 ; 149-58 .
28. Luscombe CJ, Fryer AA, French ME, Lancet.2001, 358 ; 641 .
29. Johnson CS, Heshberger PA, Trump DL,. Cancer Metastasis Rev.2002, 21(2) ; 147-58.
30. Koike M., Elstner E., Campbell M. J., Asou H., Uskokovic M Tsuruoka N., Cancer Res.1997, 57;4545- 4550.