

The interaction between CX3CR1-CX3CL1 in prostate cancer

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Prostate cancer is one of the most frequently appearing cancers in men, and the global burden of this disease is rising. The prostate gland is a male sex auxiliary gland that is responsible for producing some elements of the seminal fluid. Prostate cancer may occur when the cells in the prostate are mutated and begin to multiply without control. These cancerous cells can reach other organs by metastasis, especially to the bones and lymph nodes. Prostate cancer can cause pain, difficulty in urination, erectile dysfunction, and other symptoms. The prevalence of prostate cancer varies throughout the world. Although it varies depending on the country, it is less common in northern and eastern Asia, most common in Europe and very common in the United States. Many factors, such as genetics, sexually transmitted diseases, and diet, have been seen as risk factors in the development of this cancer.

Fascinatingly, it has been reported that fractalkine (CX3CL1) participate in the molecular events that regulate cell migration, adhesion and survival of human prostate cancer cells. Fractalkine, also known as chemokine (C-X3-C motif) ligand 1, is the only family member recognised so far from the CX3C chemokine subfamily. CX3CR1 is also known as the fractalkine receptor or G-protein coupled receptor 13 (GPR13), a protein which is encoded by the CX3CR1 gene. As their characteristic, CXCL1 and CX3CR1 bind specifically to each other.

It is also believed that CX3CR1-CX3CL1 axis plays a critical role in metastasis of prostate cancer to the bone marrow. Limited therapeutic options exist for prostate cancer patients who have progressed to advanced metastatic disease, and pharmacological interference of the chemokine network may serve to control tumour cell dissemination and the establishment of metastasis. More detailed knowledge of the mechanisms regulating of the above-given axis is required, to further define and find out the capacity and effectiveness of targeting these alliances for therapeutic intervention in prostate cancer. Here, the expression pattern and characteristics interlinks were investigated in several prostatic cancerous as well as non-cancerous cell lines.

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