Repurposing hypothyroidism drug liothyronine for cancer immunotherapy

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Video Byte

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Abstract

Immune checkpoint blockade has enabled great progress in cancer immunotherapy. TIGIT is a novel immune checkpoint that plays a critical role in cancer immunity. TIGIT's inhibitory function relies on the molecule's interaction with the ligand PVR. That makes blocking the TIGIT/PVR interaction a promising therapeutic approach. But small molecules suited for the job have not yet been investigated. Now, research points to the benefits of the molecule liothyronine. Liothyronine is an artificial hormone used to treat hypothyroidism. A combination of molecular docking, screening, and a series of in vitro and in vivo assays revealed that liothyronine could be a suitable TIGIT/PVR blocker. When applied to tumor-bearing mice, liothyronine significantly inhibited tumor growth by enhancing CD8⁺ T cell infiltration and immune responses. The structure-activity relationships and extensive side effects of liothyronine remain to be investigated but the findings demonstrate the power of molecular docking for the repurposing of approved drugs and, more importantly, point to a new potential candidate for cancer immunotherapy.