

News & Comments

Repressive Effect of Carfilzomib*Tom Sebastian*

The white blood cells that produce antibodies become carcinogenic and develop multiple myeloma as a result. In the bone marrow, where blood cells are made, multiple myeloma cells build up. The level of M protein in the serum is used to gauge the progression of multiple myeloma. As a proteasome inhibitor for the treatment of multiple myeloma, carfilzomib received approval from the US Food and Drug Administration in 2012. Serum from multiple myeloma patients had reduced levels of paraoxonase (hPON1) activity. With a molecular weight of 43–45 kDa, it is a glycoprotein. Biochemical investigations have shown that hPON1 is present in a wide range of mammalian tissues, including human serum.

This work looked at how the common cancer drug carfilzomib inhibited tumour growth in vitro.

All chemicals were obtained from Sigma-Aldrich Chemie GmbH (Taufkirchen, Germany). Carfilzomib was obtained from Bursa Uludag— University Faculty of Medicine Oncology Department. Sigma-Aldrich Chemie GmbH provided all the chemicals (Taufkirchen, Germany). The Bursa Uludag University Faculty of Medicine Oncology Department provided the carfilzomib. Carfilzomib, which is frequently used in cancer chemotherapy, was studied for its inhibitory effect. Three different concentrations of this chemotherapeutic medication were examined.

This study examined the inhibition of paraoxonase activity by the anti-cancer medication carfilzomib. Competitive inhibition is the type that exists. Critical implications including cardiovascular disorders may result from medications with reduced paraoxonase activity. One of the body's antioxidant defence mechanisms is hPON1.

The human body has numerous mechanisms for removing reactive oxygen species. By scavenging reactive oxygen species produced by live metabolism, hPON1 defends LDL, HDL, and macrophages against oxidative stress. The hPON1 hence shields against cardiovascular disease. Aspirin was tried to see whether it could improve hPON1 activity. In patients with coronary artery disease, aspirin usage dramatically enhanced hPON1 activity. It was discovered that hPON1 activity was unaffected by valsartan or barnidipine.

Palonosetron hydrochloride dramatically inhibits enzyme activity as compared to other anti-cancer medications. Drugs were found to be inhibited in the following order: 1>2>3. As mentioned before, carfilzomib in this investigation significantly inhibited the enzyme.



Patients with cancer taking this medication run the risk of developing cardiovascular issues due to the PON1 enzyme's decreased activity.

The chemotherapeutic medication carfilzomib is used to treat cancer. They may result in various metabolic abnormalities when used in cancer therapy, particularly in patients with atherosclerotic lesions. However, certain *in vivo* research should support findings.

JOURNAL REFERENCE

Soyut, H., 2022. An *in vitro* study: Inhibitory effect of carfilzomib on human serum paraoxonase-1 (hPON1). *Int. J. Pharmacol.*, 18: 522-526.

KEYWORDS

Paraoxonase, carfilzomib, inhibition, anticancer drug, multiple myeloma, HDL, lymphoblastic lymphoma

