

Boerhaavia diffusa in renal cancer therapy as a green anticancer approach

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Renal cell carcinoma is the most common type of kidney cancer. The victims of kidney cancer seem to be rapidly increasing. This cancer originates in the lining of the proximal convoluted tubule, a part of the very small tubes in the kidney that transport primary urine. The major issue is that the patients diagnosed with renal cell carcinoma generally develop metastatic lesions and spread the tumour to other parts of the body, thus leading to progression of the severity of the disease. Many pharmaceutical drugs have been developed for the treatment of this disease. There are many limitations to the use and administration of pharmaceuticals as most of them tend to be more nephrotoxic and hence create more complications. To tackle this issue, botanicals can be used. To treat kidney-related disorders many medicinal plants could be used that exhibit nephroprotective activity. The medicinal plant most appropriate to treat kidney cancer is *Boerhaavia diffusa*. This is because *Boerhaavia diffusa* is capable of showcasing excellent nephroprotective and hepatoprotective properties. Many alkaloids derived from these plants depict great potential as anticancer agents. Punarnavine, a quinolizidine alkaloid extracted from the root extract of *Boerhaavia diffusa* can be a potential anticancer agent. It has been tested against other tumours, such as lung, breast, and skin cancer. The antiproliferative activity and in vitro apoptotic activity of punarnavine, and the expression levels of cancer-related proteins of punarnavine are being studied extensively. Further extensive research on *Boerhaavia diffusa* would increase its acceptance and inclusion in cancer therapy pertaining to kidneys.

Keywords: Renal carcinoma, Alkaloid, Anti-cancer activity, Anti-proliferative activity, In vitro apoptotic activity, Boerhaavia diffusa

Citation:

Shreemaya Ramanathan. *Boerhaavia diffusa* in renal cancer therapy as a green anticancer approach. The Torch. 2020. 1(1).

Available from:

<https://www.styvalley.com/pub/magazines/torch/read/boerhaavia-diffusa-in-renal-cancer-therapy-as-a-green-anticancer-approach>.