Mutations in both \textit{BRCA1} and \textit{BRCA2}, important risk factors for ovarian and breast cancers in women, have also been implicated in prostate cancer, since it is the most consistently reported site for susceptibility in male carriers of \textit{BRCA}. The resistance of prostate tumors to current treatment modalities made it challenging to develop novel molecules to combat them. This study is mainly intended to evaluate the cellular manifestations of certain naphthaquinones in comparison to tamoxifen and finasteride in the absence of \textit{BRCA2} in castrate resistant prostate cancer cells.

Cell proliferation assays showed that a plant derived vitamin K-3 analogue, plumbagin, is the most potent anticancer compound when compared to other structurally related compounds in both PC3 and DU145 cells. The IC\textsubscript{50} values of different compounds on both cell lines prove that the phytochemicals used for the study are more effective in PC3 cell lines than DU145 cell lines. siRNA transfection was carried out to analyze the effect of compounds on cells in \textit{BRCA2} blocked condition. Cytotoxic assay was performed in untransfected and \textit{BRCA2} siRNA transfected PC3 and DU145 cells. Comparative proliferation analysis indicated that naphthaquinones have chemotherapeutic potential in \textit{BRCA2} blocked prostate cancers. Mitochondrial membrane potential studies showed that these naphthaquinones induces cell death via apoptosis. Structure-activity relationship of these selected naphthaquinones with estrogen receptors and androgen receptor were investigated using \textit{in silico} docking analysis. Plumbagin has the potential as a good candidate for binding all the three receptors but simulation studies showed comparable affinity of the compounds towards the androgen and estrogen receptors.

Our studies concluded that naphthaquinones are potential drug candidates against \textit{BRCA1/2} blocked castrate resistant prostate cancer in comparison to other structurally related compounds.

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