In silico and *in vitro* screening of potential repurposed drugs in nasopharyngeal carcinoma

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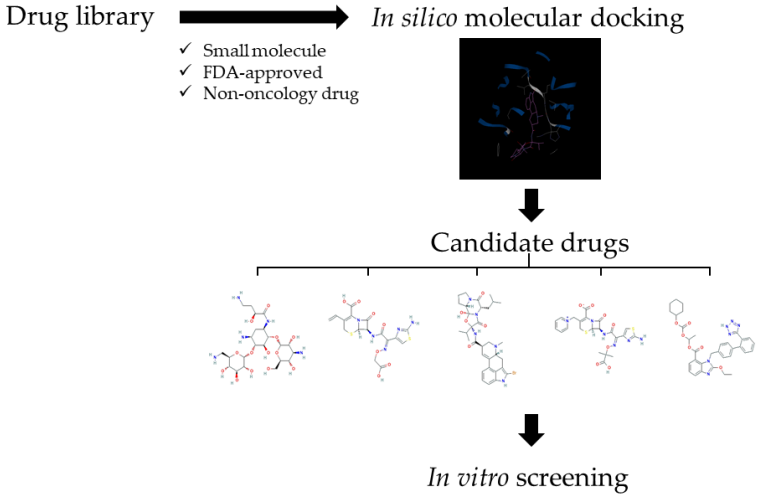
Abstract: Nasopharyngeal carcinoma (NPC) is a type of head and neck cancer. Standard treatments including radiotherapy and chemotherapy are effective only for the early stages. As NPC occurs in the silent painless area, causing no noticeable signs and symptoms therefore most NPC patients are detected in the advanced stages, causing treatment ineffectiveness. At present, targeted therapy is gaining popularity as it introduces less toxicity to normal cells and improves the patient's wellness. However, *de novo* cancer drug development is costly and time-consuming, therefore, drug repurposing could reduce the time and costs in development processes. Moreover, current technologies and accessible data allow rapid screening of drugs with known chemical structures via a computational approach. Thus, in this study, we applied a drug repurposing approach to screen potential drugs for NPC via *in silico* molecular docking by targeting serine–arginine protein kinase 1 (SRPK1), a key regulator in alternative splicing, followed by *in vitro* cell cytotoxicity screening on NPC cells. Here, we found among others that an anti-hypertensive drug, candesartan cilexetil, was cytotoxic to NPC cells.

Graphical abstract:



Keywords: Nasopharyngeal carcinoma; Drug repurposing; SRPK1; *in silico* molecular docking; Candesartan cilexetil.

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