Development and Advances of Drugs for Cancer Theranostics – PART-II

Nowadays, deaths from cancer are only behind cardiovascular disease all over the word, and the morbidity and mortality of cancer will continue to grow for a long period [1,2]. Chemotherapy remains the cornerstone in the control and eradication of cancers, but the drug resistance and severe side effects have already become the major challenges for effective cancer chemotherapy. Therefore, it’s urgent to develop novel anticancer agents with prominent in vivo efficacy against drug-resistant even multidrug-resistant cancers and low side effects.

Natural products constitute an important source of new efficacious anticancer agents to counter increasing resistance and fatal side effects, and among them, indole alkaloids which are abundance in natural resources could exert the anticancer activity via various modes of action [3,4]. Moreover, some of indole alkaloids which are represented by Vinblastine and Vincristine have already used in clinical practice or under clinical evaluations for the treatment of cancers. One review focuses on the recent advancements on indole alkaloids as potential anticancer agents, the structure-activity relationship and mechanisms of action, providing useful information for further modification of indole alkaloid lead hits.

Heterocycles play a pivotal role in manipulation of physicochemical properties of molecules, leading to improvement of pharmacological, pharmacokinetic, and toxicological profiles of molecules [5]. 1,3-Oxazole is readily to bind with diverse enzymes and receptors in cancer cells, so 1,3-oxazole derivatives endow with potential activity against both drug-sensitive and drug-resistant cancers, revealing the potential of 3-oxazole derivatives as putative anticancer agents [6,7]. One review covers the recent development of 1,3-oxazole derivatives with potential anticancer activity to provide an insight for rational designs of more effective candidates.

Fluoroquinolones which are usually used as antibiotics also demonstrated promising anticancer activity, and some of which are exemplified by Quarfloxin have already used in clinics for the treatment of various cancers [8]. Moreover, many fluoroquinolone-hydrazone/acylhydrazone hybrids possess promising anticancer activity, so fluoroquinolone-hydrazone/acylhydrazone hybrids could serve as useful templates for clinical deployment in the control and eradication of cancers [9,10].

REFERENCES

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