Drug Discovery

This thematic Issue entitled “Drug Discovery” includes three works investigating the potential beneficial role of drugs in different fields of clinical application.

Ghazaleh Khalili-Tanha et al., in their mini review, investigated the role of drugs in preventing post-surgical adhesion after abdominal or pelvic surgeries. Available evidence suggest the involvement of the RAS signaling pathway in inflammation, proliferation, and fibrosis pathways, as well as in post-surgical adhesions. Several FDA-approved drugs are used for targeting the Renin-Angiotensin System (RAS) system, and some of them are being tested in different models to reduce fibrosis and improve adhesion after surgery, including telmisartan, valsartan, and enalapril. They concluded that the identification of the pathological causes of post-surgical adhesion and the potential role of targeting the RAS might help prevent this problem. Based on the pathological function of RAS signaling after surgeries, the administration of Angiotensin II type 1 Receptor Blockers (ARBs) may be considered a novel and efficient approach to prevent postsurgical adhesions. However, pre-clinical and clinical studies should be carried out to have better information on the clinical significance of this therapy against post-surgical adhesion formation [1].

Yuan Li et al. performed a meta-analysis on the multiple bioactivities of curcumin that have beneficial effects on diabetic foot ulcers. Their meta-analysis indicated that curcumin had significant effects on wound healing rate and blood vessel density compared with control ($p < 0.05$). The wound regeneration properties of curcumin for diabetic wounds are thought to mainly work through the possible mechanisms of antioxidation, enhanced cell proliferation, increased collagen formation, and angiogenesis. The findings indicate that more randomized controlled trials should be pursued to obtain more reliable results regarding inflammatory response. Overall, curcumin might be a probable candidate for diabetic foot ulcers and may contribute to future clinical trials [2].

Magy Gouda et al. synthesized and tested in vitro the antitumor activity of the compounds 2,6-Diarylidenecyclohexanones (3a-h) and dispiro[oxindole-cyclohexanone]-pyrrolidines (6-10) against breast cancer cell lines (MCF-7, and MDA-MB-231), breast fibrosis cell line (MCF-10a), and placental cancer cell line (JEG-3). The synthesized compounds showed good cytotoxicity effects against tumor cell lines comparable to tamoxifen. Several compounds showed cytotoxic selectivity toward cancer cell lines over normal cell lines. Based on structural similarity to spirooxindoles in clinical trials, they hypothesized that synthesized molecules might work by acting as MDM2 inhibitors. Molecular modeling predicted that both classes of synthesized compounds bind similarly to high-affinity ligand 6SK and induce similar binding interactions. They aimed to carry out in future, studies regarding the optimization of medicinal chemistry, as well as mechanistic studies to develop identified compounds and enhance their inhibition effect [3].

The research about Drug Discovery is significant because new molecules are necessary to treat severe orphan diseases and to personalize therapy in different patients.

REFERENCES