Medicinal chemistry: Design and synthesis of novel compounds for the treatment of disease or condition.

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Introduction

NonSteroidal Anti-Inflammatory Drugs (NSAIDs) are an unhomogeneous family of pharmacologically active compounds used in the treatment of acute and chronic inflammation, pain, and fever. However, nevertheless NSAIDs are the most widely used drugs, their long-term clinical employment is associated with significant side effects and the steady use determines the onset of gastrointestinal lesions, bleeding, and nephrotoxicity. The novel 4-thiazolidinones were tested for in vivo anti-inflammatory activity by carrageenan-induced paw edema and pleurisy assays in rats. Cancer is one of the most dangerous diseases that threaten human life. The evidence shows that of all cancer-related deaths, almost 25–30% is due to tobacco. As many as 30–35% are linked to diet, about 15–20% are due to infections, and the remaining percentage is due to other factors radiation, physical activity, stress, and environmental pollutants.1 The most common cancer type among women is breast cancer that typically derives from breast tissue. Breast cancer occurs due to several risk factors. These main risk factors for the development of breast cancer include obesity, oral contraceptives, alcoholism, and hormone replacement therapy during menopause, ionizing radiation, age, having children at elder ages or not having at all, genetic factors, and a family history of breast cancer [1].

The development of highly effective conjugate chemistry approaches is a way to improve the quality of drugs and of medicines. The aim of this paper is to highlight and review such hybrid compounds and the strategies underpinning their design A variety of unique hybrid compounds provide an excellent toolkit for novel biological activity First we discuss the anticancer potential of hybrid compounds, containing daunorubicin, benzyl- or tetrahydroisoquinoline-coumarin, and cytotoxic NSAID-pyrrolizidine/indolizine hybrids, then NVGT cationic lipid-based delivery agents, where steroids or long chain fatty acids as the lipid moiety are bound to polyamines as the cationic moiety Neuronal Voltage-Gated Sodium Channels (NVSC) play an important role in the generation and propagation of action potentials in neurons and other excitable cells. Thus, NVSC blocking agents represent a clinically important class of drugs used in the treatment of pain, seizures and arrhythmia [2].

The identification of compounds with anti-mycobacterial activity within classes of molecules that have been developed for other purposes is a fruitful approach for the development of anti-Tuberculosis (TB) agents. In this study we used the scaffold of celecoxib which exhibits several activities against different pathogens, for the design and focused synthesis of a library of 64 compounds. For the primary screen, we used a bioluminescence-based method by constructing a luciferase-expressing reporter M.tb strain which contains the entire bacterial Lux operon cloned in a mycobacterial integrative expression vector. Through the screening of this library, we identified 6 hit compounds with high in vitro anti-mycobacterial activity. The whole genome sequencing of many human pathogens, has allowed for the identification of literally thousands of new essential bacterial drug targets, but has failed to bring a robust number of novel antibacterial drugs to the market place [3].

That study yielded a new mechanistic class of antibiotics that target biotin carboxylase, a bacterial enzyme involved in fatty acid biosynthesis with an ATP-binding site very similar to that of eukaryotic protein kinases. Importantly, sufficient structural differences exist within the ATP-binding site of biotin carboxylase to allow for the identification of molecules with considerable specificity for the bacterial enzymes relative to host protein kinases. Based on these findings, we successfully identified several compounds from the celecoxib-derived focused compound library established in our laboratories with promising anti-bacterial activity against methicillin-resistant here, we report a systematic evaluation and identification of a series of new anti-mycobacterial agents sharing celecoxib's core structure [4, 5].

Conclusion

Yet the development of programs in conservation biology is inhibited by long-standing academic constraints, including disciplinary structure, communication barriers among disciplines, and lack of reward systems, research funds, model curricula, and evaluation techniques for cross-disciplinary work Descriptions of 16 graduate programs in conservation biology indicate that academia is responding to the challenge The conservation-planning assessment combined spatial-distribution models for 646 conservation features, spatial economic-return models for 28 alternative land uses, and spatial maps for 4 threats.

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