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Opinion Article

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A Short Note on Indole-Containing Antiviral Agents and its Therapeutics Applications

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DESCRIPTION

Indole derivatives can be found in a wide range of natural goods, including plants, animals, and marine species. The indole core is found in nearly all physiologically active natural compounds. For example, Indole-3-Acetic Acid (IAA) is a plant hormone of the auxin class; tryptophan 2, an essential amino acid, participates in many essential biological processes; serotonin or 5-Hydroxytryptamine (5-HT) 3, a neurotransmitter biochemically derived from tryptophan, is found in all bilateral animals; and melatonin 4, a hormone found in animals, plants, and microbes, in which animals use the variation in. The indole core is also well-known as one of the most essential scaffolds for drug discovery. Due to their intriguing anticarcinogenic, antioxidant, and antiatherogenic effects, biological studies of indole-3-carbinol (I3C) 5 and 3,3-DiIndolylMethane (DIM) 6, a natural product derived from the digestion of I3C, which is found at relatively high levels in cruciferous vegetables such as broccoli, Brussels sprouts, cabbage, and kale, have been the subject of on-going research. An indole alkaloid found naturally in several plants, ajmalicine 7 (also known as-yohimbine or raubasine), is an antihypertensive medication used to treat high blood pressure.

It works as a 1-adrenergic receptor antagonist with a preference for 1-adrenergic receptors over 2-adrenergic receptors, which explains why it has hypotensive rather than hypertension effects. In patients with mental illnesses, reserpine 8, an indole alkaloid, is used to treat high blood pressure and extreme agitation. Vinblastine 9 is used to treat Hodgkin's disease, Kaposi's sarcoma, non-lymphoma, Hodgkin's and cancers of the breast and testicles, among other cancers. Indole is one of the most important structural motifs in drug development, and it is classified as a "privileged scaffold," a phrase coined by Evans and colleagues to characterise scaffolds capable of acting as ligands for a wide range of receptors. Indole derivatives have the unusual ability to mimic the structure of peptides and bind reversibly to enzymes, allowing for the discovery of new medications with a variety of modes of action. Seven commercial medications containing indole were among the Top-200 Best Selling Drugs by US Retail Sales in 2012.

Cialis, a medicine licenced for the treatment of Erectile Dysfunction (ED), the signs and symptoms of Benign Prostatic Hyperplasia (BPH), and both ED and the signs and symptoms of BPH, exemplifies this. There are also a large number of licenced indole-containing medications on the market, as well as substances in various stages of clinical development or registration.

Infections caused by viruses are extremely common. The common cold, influenza, chickenpox, herpes, gastroenteritis (stomach flu), Human Immunodeficiency Virus (HIV/AIDS), and hepatitis are all viral diseases that are well-known. Viral diseases can cause significant and sometimes life-threatening consequences, and viral infections are thought to be responsible for more than 60% of illnesses in affluent countries. The Severe Acute Respiratory Syndrome (SARS) epidemic, which erupted in southern China in 2003, claimed the lives of almost 800 people around the world. Middle East Respiratory Syndrome (MERS) is a viral respiratory infection that was first diagnosed in 2012 in Saudi Arabia. MERS-CoV is a corona virus that causes it. The World Health Organization (WHO) documented 699 instances of human MERS infection as of June 2014, including at least 209 deaths. Since its first appearance in 1976, the most current outbreak of Ebola Virus Disease (EVD) in West Africa in 2014 has caused WHO to declare a worldwide public health emergency. According to the World Health Organization, the current Ebola outbreak has infected more than 7470 people and killed more than 3431 people as of October 2014. Antiviral medications are critical in rapidly spreading epidemics, however practically all antivirals are prone to drug resistance as infections evolve and become less receptive to therapy. Despite recent approvals of new antivirals in the HIV and HCV therapeutic sectors, there are still significant unmet medical requirements to improve current therapy and those for which no treatment exists.

Because of the large number of indole-containing compounds concentrated on antiviral drugs which the goals of this study are to provide a broad analysis of currently available indole antiviral medicines.

- To provide one of the most comprehensive lists of indole antiviral agents, drugs on the market, or compounds in clinical trials.
- To focus on recent developments of indole compounds (including natural products) and their antiviral activities, summarise the structure property in the hopes of inspiring new and even more creative approaches.
- To provide perspectives on how indole scaffolds as a privileged structure might be exploited in the future.