



Multi-target polypharmacology of phthalic anhydride derivatives against microbial infection, inflammation, Alzheimer, Epilepsy and cancer

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Abstract

Drug that interact with various targets of either of single disease or numerous disease pathways are referred to as polypharmacology. This idea has been highly valued in the context of complicated disorders; including cancer, anti-Alzheimer, antiepileptic and anti-infective. Research on polypharmacological drug discovery is started by combining several substances that are accessible through public databases. Patient having impaired immune system suffered from complicated disease. Drug formulations have multiple compositions which may cause resistance problem and adverse effect because of unintentional drug-target intentions. Polypharmacology is still a new approach to aim for less harmful and more productive outcomes. Phthalic anhydride scaffold has emerged as a crucial novel medication to combat infectious disease including Alzheimer, Epilepsy, cancer and other disorder of life style. The present study is an attempt to explore the polypharmacological effects of phthalic anhydride compounds on to combat microbial infection, inflammation, Alzheimer, Epilepsy and cancer. Also provide systematically compile and present all available information in a manner that will be beneficial for future research.

Keywords Phthalic anhydride · Antimicrobial activity · Antitumor activity · Anti-Alzheimer activity · Anticonvulsant activity · Anti-inflammatory activity and analgesic activity

Introduction

For many years, having a one drug for only one illness target was preferred for a long time. Nevertheless, the researchers found that using pharmacological multitarget is one of the significant effective approaches to combat

multiple disorders. To combat a variety of disease, researchers have recently looked for polypharmacology medication that acts on distinct targets rather than just single target [1]. Phthalic anhydride is a versatile compound that acts as a dicarboxylic acid anhydride. It consists of a benzene ring attached to furan 1–3 dione. It is present in both *Ligusticum striatum* and *Ligusticum chuanxiong*. Phthalic anhydride is a substance that appears as white flakes or occasionally as needles. It has a pungent odor and a molecular weight of 148.11 g/mol. In 1836, Auguste Laurent successfully produced phthalic anhydride for the first time by oxidizing naphthalene with liquid phase mercury as a catalyst. However, in the most recent method, in a gaseous phase, vanadium pentoxide catalyst reacts with naphthalene and molecular oxygen. The substance exhibits high solubility in water, ethanol, and acetone, but only limited solubility in ether and chloroform [2, 3].

Phthalic anhydride, also referred to as 2-Benzofuran-1,3-dione, 1,3-dioxophthalan, phthalandione, 1,3-phthalandione, 1,2-benzenedicarboxylic acid anhydride, phthalic acid

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