

Anti-emetic effects of bioactive natural products

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Abstract

Emesis, also known as nausea and vomiting, are common symptoms associated with ingestion of toxicants, drug side effects, advanced terminal diseases such as cancer and postoperative procedures. Emesis is mediated through the coordinated action of central and peripheral regulatory centres that involve receptors including dopamine Type 2, serotonin, muscarinic cholinergic, histamine, cannabinoids and NK-1 receptors. Many anti-emetic drugs targeting these receptors are currently in use but they also cause undesirable side effects such as excessive sedation, hypotension, dry mouth, dysphoria, hallucinations and extrapyramidal signs. This review highlights the pharmacological mechanism of emesis and current antiemetic drugs together with detailed analysis of *in vitro* and *in vivo* anti-emetic bioassay models. The pharmacology of crude natural products extracts and purified anti-emetic compounds (cannabinoids, chalcones, diarylheptanoids, flavonoids, hydroxycinnamic acids, lignans, phenylpropanoids, polysaccharides, saponins, terpenes and glycosidic derivatives) are also systematically presented with their mechanism of action. The potential of natural products as sources of new clinically proven anti-emetic drugs are discussed

Keywords: Emesis, anti-emetics, natural products, anti-emetic experimental models, drug development.

Introduction

Emesis is a generally unpleasant activity that results in the expulsion of stomach contents through the mouth and clearly associated with gastrointestinal motor activity. It could as such be regarded as the body's response to certain drugs, disease co-morbidities and defenses against food poisoning (Hall & Driscoll, 2005). While vomiting can serve the function of emptying noxious chemicals from the gut, nausea plays a role of conditioned