Biomedicine & Pharmacotherapy 93 (2017) 27–39

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Second generation H1 - antihistamines interaction with food and alcohol—A systematic review

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ARTICLE INFO

Article history:
Received 13 February 2017
Received in revised form 2 June 2017
Accepted 5 June 2017

Keywords:
H1-antihistamines
Allergy
Interaction drugs – food
Grapefruit
Alcohol

ABSTRACT

Histamine is a mediator of many physiological processes. It plays an important role in modulating allergy reactions and immune system responses. H1 receptor is a therapeutic target for drugs applied in allergic diseases such as allergic rhinoconjunctivitis, urticarial, or atopic dermatitis. H1-antihistamines display different chemical structures, pharmacokinetics and a potential for drug–drug and drug-food interactions. Drug-food interactions are known to reduce therapeutic effects of the medicine, as well as to induce a potent adverse drug reactions. Considering it all, a systematic review was conducted to investigate the importance of drug-food interaction for H1-antihistamine drugs. As non-sedating second generation H1-antihistamines remain to be drugs of choice in treating allergic conditions, the review has been focused on this particular class of medicines.

The aim of this paper is to examine the evidence of food-drug and food-alcohol interactions for second generation H1-antihistamine drugs.

A systematic literature queries were performed in the following databases: Medline (via PubMed), Cochrane Library, Embase and Web of Science (all from their inception date till October 2016). The queries covered nine specific names of second generation anthistamine drugs, namely bilastine, cetirizine, desloratadine, ebastine, fexofenadine, levocetirizine, loratadine, mizolastine, and rupatadine, in combinations with such terms as “food”, “juice”, “grapefruit”, “fruits”, “alcohol”, “pharmacokinetics”, and “meal”. Additional publications were found by checking all the reference lists. Where none data on drug-food interaction could be found within the investigated databases, a specific drug prescribing information was used. 2326 publications were identified with the database queries. Articles were subjected to analysis by reviewing their title, abstract and full text; duplicated papers were removed. Having collected a complete set of data, a critical review was undertaken.

For selected H1-antihistamines food, fruit juices or alcohol consumption may significantly impact the efficacy and safety of the therapy. This issue shall be well understood to educate patients properly, as it provides the major therapeutic element in allergic diseases.

Contents

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http://dx.doi.org/10.1016/j.biopha.2017.06.008
0753-3322/

1. Introduction

Histamine is a mediator of many physiological processes, it plays an important role in modulating allergy reactions and immune system response [1,2]. Four types of histamine receptors have been identified so far. H1 receptor is present on many cells, including immune and inflammatory ones. Histamine regulates their functioning. Histamine H2 receptor plays a role in gastric acid

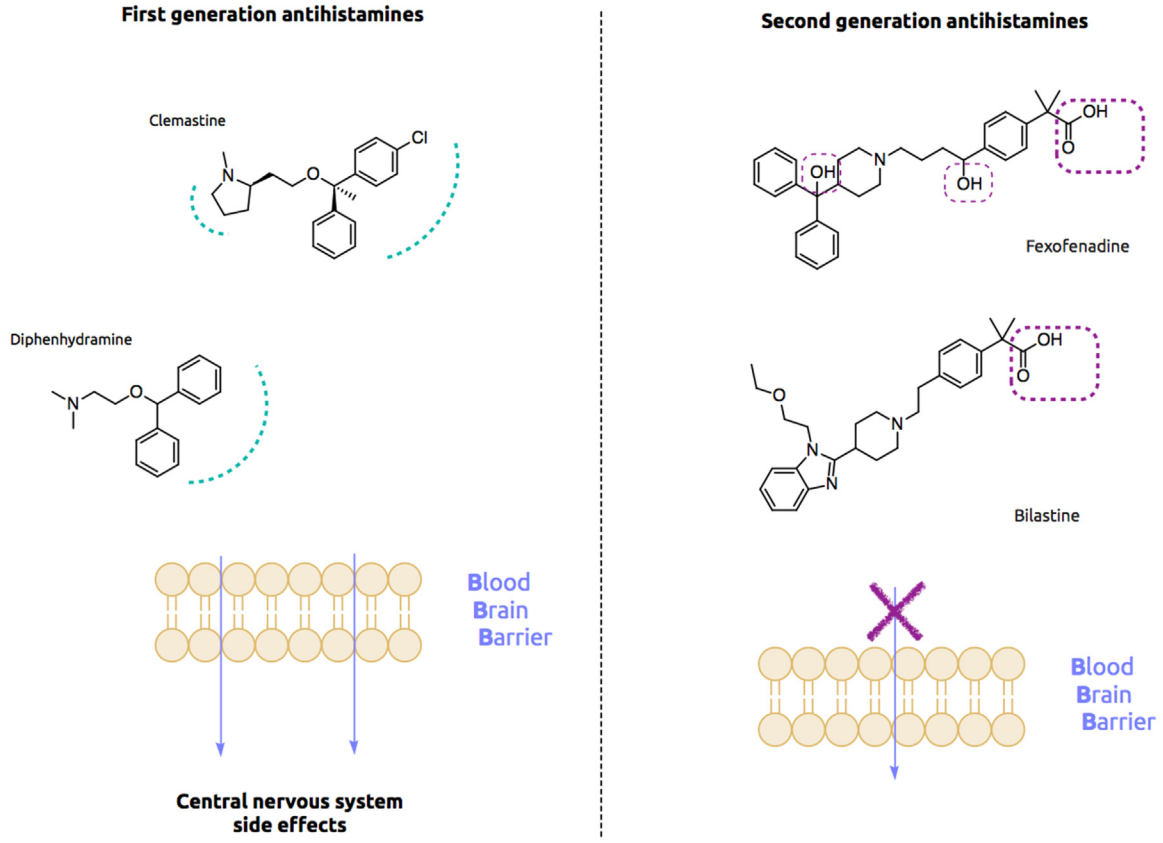

Fig. 1. Comparison of chemical structures of the first and second generation antihistamines.
The high lipophilicity of first generation antihistamines results in facile penetration across the blood brain barrier and central nervous system side reactions (green line represents lipophilic elements). Second generation antihistamines are less lipophilic and poorly pass through the blood brain barrier (hydrophilic groups are marked in purple).