COMPARATIVE ANALYSIS OF MODERN EXPECTORANT DRUGS

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Abstract: *Mucus hypersecretion is a clinical feature of severe respiratory diseases such as asthma, cystic fibrosis and chronic obstructive pulmonary disease. Airway mucosal infection and/or inflammation associated with these diseases often gives rise to inflammatory products, including neutrophil-derived DNA and filamentous actin, in addition to bacteria, apoptotic cells and cellular debris, which may collectively increase mucus production and viscosity. Mucoactive agents have been the medication of choice for the treatment of respiratory diseases in which mucus hypersecretion is a clinical complication. The main purpose of mucoactive drugs is to increase the ability to expectorate sputum and/or decrease mucus hypersecretion. Many mucoactive drugs are currently available and can be classified according to their putative mechanism of action. Mucoactive medications include expectorants, mucoregulators, mucolytics and mucokinetics. By developing our understanding of the specific effects of mucoactive agents, we may result in improved therapeutic use of these drugs. The present review provides a summary of the most clinically relevant mucoactive drugs in addition to their potential mechanism of action.*

Key words: *airway clearance; bronchiectasis; mucoactives; pulmonary rehabilitation.*

INTRODUCTION

Drugs of this group are used to facilitate the secretion of mucus (sputum) produced by the bronchial glands. Expectorants are divided into two large groups according to the mechanism of action: 1) drugs with reflex (indirect) action, 2) direct action drugs.Reflector (indirectly) effective sputum transfer mainly ip ekakuan a andthe term is specific to preparations (infusions and extracts) of the psis plant. They contain alkaloids (also saponins in thermopsis) and other biologically active compounds, which tickle the receptors in the gastric mucosa after drinking. In this case, the activity of the glands on the mucous membrane of the bronchi increases, and a lot of liquid (low viscosity) mucus is released. The amount of sputum (separation) increases and migrates easily due to low viscosity. The bronchi due to the movement of the ciliated growths of the epithelium, the contraction and peristalsis of the

bronchial muscles increases, and therefore the sputum secretion is relieved. The bronchi are emptied, breathing becomes easier[1,2.3].

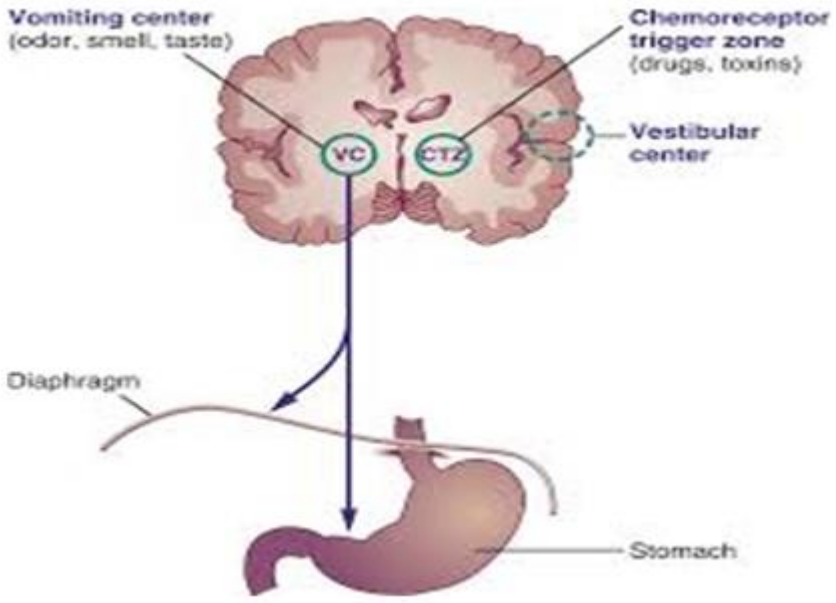
The above-mentioned drugs in large doses reflexively induce vomiting, but they are not currently used for this purpose Direct-acting expectorants (mucolytic means) expectorant property after drinking (resorptive effect) bronchial glands it comes to the surface after separation in the product. In it, they increase the secretion of glands and sputum becomes liquid. At the same time, under their influence, the movement of the ciliated growths of the bronchial epithelium increases, sputum production side is absorbed faster. So, the main property of mucolytic drugs is sputum due to dilution (melting), it consists in reducing its viscosity. Therefore, this group also includes some enzymes. But mucolytic Their effectiveness is due to the fact that the mechanism of action of the drugs is different according to the type of sputum is not the same. Lung diseases are common in medical practice occurs, so it is important to free the upper respiratory tract from sputum. Many drugs are recommended for this and are widely used in inpatient and outpatient practice.

Acetylcistein (broncholysin, mucoslvin) is a derivative of cysteine amino acid, has a strong mucolytic effect. Mechanism of action: free sulfhydryl radicals (SH) contained in the drug are acidic in sputum breaks the disulfide bonds of mucopolysaccharides, as a result, mucoproteins are depolymerized and the viscosity of sputum decreases.

It liquefies phlegm and reduces inflammation. The pus at the same time also dilutes. The drug is introduced into the trachea by inhalation, if it is not possible (anesthesia, coma, trauma of the respiratory tract), it is introduced into the muscle.

Also, long-acting oral preparations have been created (ATsTs-100, ATsTs-200, ATsTs-long). Acetylcysteine is completely absorbed from the intestine, but its bioavailability is low (about 10%), since most of the drug is metabolized in the liver during the first pass.

Carbocisteine (broncocode, murodin) is a drug similar to carbocisteine in terms of structure and action is considered Ambroxol (ambrobene) and bromexin, which have a similar chemical structure, are effective mucolytic and expectorant agents. The mucolytic effect of these drugs is mucoproteins and mucopolysaccharides of sputum caused by depolymerization and this leads to liquefaction of sputum. In addition, it is believed that the pharmacotherapeutic effect of both drugs is related to the stimulation of the production of endogenous surface-active substances (surfactant) in alveolar cells. In this case, the secretion of the bronchial glands is normalized, the rheological properties of sputum are improved, reduces viscosity, facilitates the removal of sputum from the bronchi.



The effect of the drug appears after 30 minutes and lasts for 10-12 hours.

These drugs are usually administered enterally. Side effects are sometimes frustrating nausea, vomiting and allergic reactions are noted.

This group also includes proteolytic enzyme preparations - crystallized trypsin, crystallized chymotrypsin, deoxyribonuclease (DNKase), which are preparations obtained from the pancreas of slaughtered black cattle.

Recombinat α-DNKase drug is produced under the name Pulmozym. It is used as a mucolytic in cystic fibrosis. It is used by inhalation. Drugs such as potassium iodide, which directly affect the glands of the bronchial mucosa and increase their secretion, are also used[4,5,6].

Sodium hydrogen carbonate is taken or inhaled as a solution. Sodium bicarbonate changes the environment of the bronchial secretion to an alkaline side, dissolves mucin, reducing its viscosity and sputum migration relieves excretion (compensated alkalosis develops). Potassium iodide and sodium bicarbonate are prescribed for drinking and in the form of an aerosol, crystallized trypsin, crystallized chymotrypsin, DNase solutions - prescribed for use in the form of inhalation (aerosol).

Potassium iodide has expectorant properties. This drug is a bronchodilator directly affecting the mucous membrane and the secretion of the glands in it strengthens. Potassium to prevent gastrointestinal irritation Iodine should be taken with milk. Gulkh ayr i ild izi, isto d ildizi, girl science ild izi, ter pingid r at, sodium benzoate preparations are also included in expectorant drugs [7].

Conclusion. For completeness, the review also discusses a number of major drug classes often clinically used to treat cough but that are not generally classified as antitussive drugs. We also reviewed a number of drug classes in various stages of development as antitussive drugs. Perhaps surprising for drugs used to treat such a common symptom, there is a paucity of well-controlled clinical studies documenting evidence for the use of many of the drug classes in use today, particularly those available over the counter. Nonetheless, there has been a considerable increase in our understanding of the cough reflex over the last decade that has led to a number

of promising new targets for antitussive drugs being identified and thus giving some hope of new drugs being available in the not too distant future for the treatment of this often debilitating symptom.

Cough remains a serious unmet clinical problem, both as a symptom of a range of other conditions such as asthma, chronic obstructive pulmonary disease, gastroesophageal reflux, and as a problem in its own right in patients with chronic cough of unknown origin.

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