

Study of ion associates formation between food azo dye ponso 4R and medicines of various pharmacological groups

Iryna Skora, Tetiana Matus, Anna Materiienko, Volodymyr Hrudko*

National University of Pharmacy, Kharkiv, Ukraine

**Corresponding author: irskoraya@gmail.com*

One of the components of a healthy and quality human life is nutrition. The pleasant smell and bright color of the products always attracted the attention of consumers. Dyes are used in food for many reasons, including for color restoration after long-term storage or processing of food products, as well as to adjust the natural color spectrum of food products. In certain concentrations, synthetic dyes, which are widely used in the food and pharmaceutical industry, can have harmful effects on human health: cause allergic reactions, cancer, hyperactivity, etc [1].

The aim of our work is an investigation the possibility of interactions between medicines of various pharmacological groups and the dye ponso 4R (E 124) with the formation of ion associates. The formation of ion associates can lead to changes in the physico-chemical properties of the initial substances, which, in turn, can affect the bioavailability of drugs.

In the course of experiment, aqueous solutions of the dye and medicinal substances were prepared, mixed in equal proportions and extracted with organic solvents – chloroform and butanol. It was previously proven, that the dye in its pure form is not extracted from the aqueous solution by these solvents.

As a result of the conducted experimental studies it was found that: papaverine and drotaverine hydrochloride, diphenhydramine and chlorpheniramine maleate react with ponso 4R and are extracted very well from the aqueous solution by chloroform and butanol.

Trimecaine, adiphenine (spasmolitin), quinine dihydrochloride, phenyramine maleate and benzalkonium chloride also form ion associates with ponso 4R, which are very well extracted with butanol and worse with chloroform.

Bendazol, lidocaine, procaine, atropine sulfate, rimantadine, scopolamine hydrobromide, doxazosin, pyridoxine hydrochloride, procainamide and ambroxol form ion associates with ponso 4R, but they are well extracted with butanol and not extracted with chloroform.

Reserpine, tiotriazoline, methenamine, miramistin, hexamethonium benzosulfonate, metronidazole, vinpocetine and ketotifen do not interact with the dye under the given conditions.

The results obtained should be taken into account when using synthetic food azo dye ponso 4R in the manufacture of medicines and prevent the use of dessert beverages and food products together with drugs that contain the listed substances. In addition, the reaction of formation the ion associates of medicinal substances with the dye can be used in the extraction-photometric analysis of medicinal substances.

References:

1. Hashem M. M., Atta A. H., Arbid M. S. et. al. Immunological studies on Amaranth, Sunset Yellow and Curcumin as food colouring agents in albino rats. *Food and Chem. Toxicology*. 2010; 48(6):1581-1586.