QUANTITATIVE DETERMINATION OF UNSATURATION DEGREE OF ANISE OIL BY PEROXY ACID OXIDATION REACTION

Ruban Ye.O., Blazheyevskiy M.Ye, Agafonov O.M

National University of Pharmacy, Kharkiv, Ukraine

Donetsk State Medical University, Donetsk, Ukraine

blazejowski@ukr.net

Anise oil (Latin Anisi salami) is an essential oil, which is extracted from pounded dried Pimpinella anisum L. riped by distillation with steam, included into State Pharmacopoeia of Ukraine (SPU 1.2, P. 360-362). It is widely used in medical practice, the food industry and the national economy (aromatic substance, flavorant (Heyfyts LA Dashunyn VM, 1994). Terpenoid trans-Anetole (n-metoksipropenilbenzen, izoestrahol) (the main component of the oil) is leaked from oil by vacuum rectification with subsequent freeze and is used for flavoring of chewing gum, to impart anise smell and taste to alcohol, confectionery, honey, nuts, it is also a component of various spices. It is also used in the manufacture of perfumes, deodorants for soaps and detergents industrial flavoring. Methods of gas (GC) and liquid chromatography to quantify are recommended.

The reaction kinetics of epoxidation anethole were studied by iodometric titration method using peroxycaprinic acid. It was found that for 40 min in methylene chloride medium peroxycaprinic acid reacts with unsaturated group quantitatively and stoichiometrically: 1 mole anethole (see Figure, 1) consumed 1 mole of oxidant. These results were obtained by the new iodometric method of quantitative determination of anethole for the remainder of oxidant and the total content of ingredients of anise oil containing unsaturated ligament (anethole, metylkhavykol, limonene, linalool, α-pinene and other monoterpenoids). The results were compared with those obtained by GC. RSD ≤ 1% (n = 5; P = 0.95%).

$$CH_3(CH_2)_8C(O)OOH + H_2SO_4 + 2KI = CH_3(CH_2)_8C(O)OH + K_2SO_4 + I_2 + H_2O$$
$$I_2 + 2Na_2S_2O_3 = 2NaI + Na_2S_4O_6.$$