Materials and methods. Interaction of amisulpride with 10 chromogenic reagents was studied, their sensitivity was determined. R_f values of amisulpride in 9 mobile phases including those recommended by The International Association of Forensic Toxicologists (TIAFT) for drug screening as well as in 15 other mobile phases used in TLC screening of drugs for 4 types of chromatographic plates (plates manufactured in Estonia with KSKG sorbent, Sorbfil, Silufol UV-254, Armsorb) were determined. Amisulpride absorbtion in UV region was studied in ethanol.

Results and discussion. Dragendorff's reagent with Munier modification and iodine vapour were the most sensitive (1.0 μg/spot). Mandelin reagent (dark green, 2.0 μg), Marqui's reagent (orange-yellow, 3.0 μg), Froehde reagent (orange-yellow→blue→green, 2.0 μg), Erdman reagent (dark blue, 5.0 μg), concentrated nitric acid (yellow→raspberry, 5.0 μg), concentrated sulphuric acid (blue→green, 2.0 μg) were selective relating the endogenous biological matrix components. The following mobile phases with a low correlation of R_f values are recommended by us: ethyl acetate–methanol–25% ammonia (85:10:5) (R_f 0.31), cyclohexane–toluene–diethyl amine (15:3:2) (R_f 0.45), methanol–25% ammonia (100:1.5) (R_f 0.50), chloroform–*n*-butanol–25% ammonia (14:8:1) (R_f 0.82). R_f values are given for Sorbfil plates. Amisulpride in ethanol had absorption maximum in UV region of spectrum at the wavelength of 225±2 and 279±2 nm. The calibration curve for the UV spectrophotometric method was described by the equation of y=(0.0453±0,0003)x, linearity was observed within the amisulpride concentration of 1.0-10.0 μg in a sample, LOD and LOQ were of 0.2 μg and 0.7 μg in a sample, respectively (at 279 nm).

Conclusions. Sensitive and selective methods developed for amisulpride detection and determination using colour reactions, thin layer chromatography and UV spectrophotometry are suitable for the purpose of chemicotoxicological analysis.

DETERMINATION OF TERPENOIDS IN *CANNABIS SATIVA L.* FROM NORTH OF LITHUANIA BY GAS CHROMATOGRAPHY MASS SPECTROMETRY (GC-MS) AFTER HYDRODISTILLATION

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Introduction. The primary research focus of *Cannabis sativa L*. are cannabinoids which present abundance indications for medical treatment, however. According to the literature sources, not only they responsible components for the activity of cannabis extracts. Terpenes play a significant role influencing some indications or inducing synergistic effects with cannabinoids. Terpenes shown many therapeutic effects like anti-inflammatory, anticarcinogen, sedative and plenty others. Terpenes and chemical compositions of Cannabis sativa L. crucially depends on its agricultural environment and breed. Since there are many different breeds, it is important to find out dominating terpenes in each breed. We analyzed two different breeds of *Cannabis sativa L*. obtained from Lithuanian north region.

The **aim** of this research was to compare different breeds of Cannabis from Lithuania and determinate their terpenes composition.

Materials and methods. *Cannabis sativa L*. breeds Santhica and Fedora were collected from Joniskis, Lithuania. Both materials were air–dried and grinded separately. For oils extraction from raw materials hydrodistillation was used. 15,0 g of material was mixed with 500,0 ml distilled water and boiled on the oil bath at 120˚ C for 3 h. Essential oils were diluted with 1,0 ml cyclohexan and then this solution was used for further GC-MS analysis. Terpene analysis were conducted using a Shimadzu GC-MS – QP2010 Ultra with AOC – 5000 Plus autosampler, Restek Rxi – 5ms (Restek Corporation) capillary column (30 m long with 0,25 mm outer diameter and 0,25 μm liquid-stationary phase thickness) with a liquid stationary phase (5% diphenyl and 95% polysiloxane). The instrument and operating conditions were: split injection mode with 60,0 split ratio, column oven temp 50,0˚ C, injection temp 260,00˚ C. The oven temperature was programmed from 50˚ C for 5 min, then 15,00 ˚C/min to 315,0˚ C

and held constant for 15 min. Main substances were determined by comparison with database mass spectra of compounds or analyzing ions characteristics of mass spectra.

Results and discussion. Terpene profiles of Santhica and Fedora were analyzed by GC-MS after hydrodistillation. Terpene profiles and abundant of terpenes were slightly different depending on a breed. Most abundant terpenes according to chromatograms were those that took up the widest areas of the peaks in chromatograms. In Santhica most abundant terpenes were sesquiterpenes Shyobunol (34,09%), Aromandendrene (26,57%), trans-α-Bergamotene (11,36%), cis-α-Bergamotene (1,98%) and monoterpene Isogeranial (11,14%). In Fedora most abundant terpenes were sesquiterpenes β-Elemene (24,38%), trans-α-Bergamotene (16,21%), β-Selinene (8,17%), trans-beta-Farnesene (6,78%) and monoterpene trans-Verbenol (16,30%).

Conclusion. We compared two different breeds of Cannabis from Lithuania and determined their terpene compositions. In Santhica and Fedora most dominating terpenes are different, however, trans-α-Bergamotene is common for both. In the Santhica breed dominating terpene profile was Shyobunol, Aromandendrene, trans-α-Bergamotene, cis-α-Bergamotene and Isogeranial. For Fedora the major terpenes were β-Elemene, trans-α-Bergamotene, β-Selinene, trans-beta-Farnesene, trans-Verbenol.

OPTIMISATION OF PRETREATMENT AND DERIVATIZATION METHOD FOR ANALYSIS OF ORGANIC ACIDS BY GAS CHROMATOGRAPHY-MASS SPECTROMETRY

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Introduction. Chromatography is the preferred method of analysis because it adequately addresses the simultaneous identification and quantification of targeted compounds. However, not all chromatographic protocols are suitable for the given task. Although the separation using this method generally targets volatile, non-polar species, the use of derivatization for polar low molecular weight species enables detection with a good resolution and sensitivity. Derivatization as and pretreatment can improve chromatographic results.

The **aim** of our work was to develop reliable and accurate method for quantitative and qualitative analysis of organic acid, such as levulic, heptanoic, malic, lactic, glycolic, oxalic, nonanoic, maleic, succinic , stearic, citric.

Materials and methods. The reaserch was done using methodology on SHIMADZU GC-MS-QP2010 Ultra chromatography system with RXI-5ms (Restek Corporation) capillary column (30 m long, with 0.25 mm outer diameter and 0.25 μm liquid-stationary phase thickness) with a liquid stationary phase (5% diphenyl and 95% polysiloxane), as carrier gas of chromatography we used helium. Organics acids were identified by comparison with database mass spectra of compounds or analyzing ions characteristic of mass spectra. The oven temperature was programmed from 75 °C for 5 min, then 10 °C/min to 290 °C for 5 min, after 20 °C/min to 320 and held constant for 5 min. The injector temperature was 260 °C, injection volume 1 μL, injection mode split, split ratio 1:10, the ion source voltage 70eV. Mass spectra scan range of m/z 35-500 amu with mass scan time 0.2 seconds, interface temperature 280 °C. All solvents were HPLC grade.

Results and discussion. In presence work we examined an effects of different derivative agents, solvents for sample dissolution and reaction solvents. The weights of samples were placed into 5 ml volumetric flasks, 3 ml (of the following solvents: water, acetonitrile, methanol, 80% methanol and 80% acetonitrile) were added and ultrasonicated for 5 minutes, then the volume was filled up to mark. 1 mL of test solutions were evaporated to dryness with a gentle stream of nitrogen, after that 100 μL of acetonitrile (methanol) and 100 μL of N,O-Bis (trimethylsilyl) trifluoroacetamide (BSTFA) or N-tert-Butyldimethylsilyl-N-methyltrifluoroacetamide (MTBSTFA) were added. The derivatization time 4 hours and temperature 70 °C were selected.