

## PHTHALATE DECONTAMINATION IN THE ALCOHOLIC MATRIX

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Humans always are surrounded by materials containing phthalates, such as insulation of wires, pipes, plastic housings, varnishes, paints and packaging materials. It is supposed that phthalates accumulate in the human body, which negatively affects its hormones, liver and kidneys may also become the causes of allergies diabetes, asthma and cancer, neurodevelopment disorders and abnormalities in the development of children. Molecules of phthalates are not structural elements of the polymer chains and therefore easily stand out in the environment, getting into the human body through food, skin or by inhalation. The aim of this work was the need to develop an effective, available and cost-effective procedure for phthalates decontamination of wines and alcoholic matrix. Sorption activity of seven natural and synthetic sorbents towards for six phthalates in the alcoholic matrix was investigated.

Sorption capacity of activated carbon, silicagel, kieselguhr, bentonite as an agent for the wine treatment [1] and synthetic adsorbent RELITE SP 411, anion exchange resin RELITE RAM 1, cation exchange resin FIBAN K-1 were studied in matrices of wines and eau de vie aged. Phthalate concentration in the extracts was analyzed by gas chromatograph with mass spectrometer SHIMADZU GCMS-QP-2010S (IS) with a COMBI PAL autosampler (CTC ANALYTICS, Zwingen, Switzerland) equipped with fused silica column RESTEK - Rtx-5MS (30m/0.25mm/0.25 $\mu$ m 5% diphenyl / 95% dimethylpolisiloxane phase) was used to perform injections and gas chromatographic analyses in an automated way [2]. Nature of the mentioned synthetic sorbents is based on the divinylbenzene copolymers [3]. Some regularities in the homologous series of phthalates such as dimethylphthalate, diethylphthalate, dibutylphthalate, bis(2-ethylhexyl)phthalate, dioctylphthalate and didecylphthalate were done. Also the negative contribution of sorbents on the different quality parameters of wine and eau de vie aged was assessed. There was studied the influence of different sorbents on the wines, in particular, on the red natural pigments - anthocyanins (HPLC method), flavoring compounds (HS-GC-MS method) and such factors as: density (g L<sup>-1</sup>), total extract (g L<sup>-1</sup>) and alcohol content (% v/v) by combined **analysis system Alcolyzer** Anton Paar. Further the action of sorbents was tested with real aged wines distillates. Influence on the light ethers (esters) was determined by GC-FID method and phenolic aldehydes such as vanillin, sinapaldehyde, coniferaldehyde and syringaldehyde was assessed by CZE. Changes of the copper ions content were estimated by atomic absorption spectroscopy. Moreover, by UV-VIS spectroscopy, sorption of coloring matter of aged wines distillates was defined. There was established that, in real samples, some part of sorption capacity was spent for non-target reactions. Considering all factors, the potential of all sorbents as reagents for wine decontamination was investigated.

**Keywords:** decontamination, phthalate, sorbent, GC-MS, sorption.

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