Volume 53(Suppl.1) 2009
Acta Biologica Szegediensis
http://www.sci.u-szeged.hu/ABS

Biological evaluation of alcoholic extracts of medicinal plants by the application of FRAP method

V Virág[1,6], Sz Jasztrab[2], P Jasztrab[3], M Then[4], I Szőllősi Varga[5], K Szentmihályi[6]

[1]Lilly Hungaria Kft., Budapest, Hungary, [2]Hungarian Army, Radó Sándor Medical Centre, Budapest, Hungary, [3]Ministry of Defence, State Health Centre, Budapest, Hungary, [4]Institute of Pharmacognosy, Semmelweis University, Budapest, Hungary, [5]Department of gemetics and Molecular Biology, University of Szeged, Szeged, Hungary, [6]Institute of Materials and Environmental Chemistry, Chemical Research Center of the Hungarian Academy of Sciences, Budapest

Alcohol is often applied as a polar solvent for extraction of bioactive agents of medicinal plants. There are hardly any data on biological values, antioxidant properties of alcoholic extracts, therefore the aim of the work was to determine the antioxidant property/reducing ability of these kind of extracts. For the uniform dosage of agents, they could be hold on as a stock of family doctors, since the alcoholic extracts of herbs choosen are official in the Hungarian Pharmacopoeia (Ph.Hg.VII). Alternative medication, e.g. homeopathy, also often use tictures of alkaloid containing, when the diluted alcoholic solution is applied for symptomatic treatment. The data according to the examination may help to estimate the dose used and the effect in both modern and alternative medication point of view.

The following alcoholic extracts were prepared by the description of Hungarian Pharmacopoeia: Tinctura Amara, Tinctura Chamomillae, Tinctura Chinae, Tinctura Ipecacuanhae, Tinctura Ratanhiae, Tinctura Saponariae, Tinctura Strychni, Tinctura Thymi, Tinct Stramonii. For examination, the extracts of 40% concentration were used.

The measurement of biological active components in extracts was performed according to the Hungarian Pharmacopoeia (Ph. Hg VII) and the determination of antioxidant values was realized by FRAP method. The method is based on the transformation of Fe^{3+} into Fe^{2+} at low pH value. Formation of Fe^{2+}-TPTZ (2,4,6-tripyridyl-S-triazine) complex is traceable by spectrometry based on color reaction at 593 nm.

The quality and quantity characteristics of extracts are agreed with the description of Ph.Hg. VII. The FRAP values of alcoholic extracts are the followings: Tinctura Amara 768.5 µmol/L, Tinctura Chamomillae 741.9 µmol/L, Tinctura Chinae 642.9 µmol/L, Tinctura Ipecacuanhae 281.8 µmol/L, Tinctura Ratanhiae 427.0 µmol/L, Tinctura Saponariae 686.1 µmol/L, Tinctura Strychni 482.9 µmol/L, Tinctura. Thymi 177.7 µmol/L, Tinctura Stramonii 832.3 µmol/L.

It is allocated that this method can be apply as the expression of vegetable alcohol-water extract of biological values.

It has been stated that the FRAP method is suitable for evaluation of biological values of alcoholic-aqueous extracts.