

## Solid Sea-Buckthorn Oil «Akvitol», its Make-up and Biological Activity

Alexander E. Kolokolnikov<sup>a</sup>, Galina K. Kolokolnikova<sup>a</sup>, Ludmila N. Bykova<sup>b</sup>,

Sergazy M. Adekenov<sup>b</sup> and Igor G. Tsoi<sup>c</sup>

<sup>a</sup>*LRP «Acvitol», Almaty, Republic of Kazakhstan.*

<sup>b</sup>*Institute of Phytochemistry MS-AS RK 470032 Karaganda, Erzhanova str., a/b 19, Kazakhstan*

<sup>c</sup>*Institute of Nutrition of MS- AS, Almaty, Kazakhstan.*

Biological activity the fruits of *Hippophae rhamnoides* L. is very well known. Existing technology of production of oil extract using vegetable oils as extracting agent has low selectivity that restricts extraction of wider spectrum of biologically active compounds containing in its seeds. We obtained sea-buckthorn oil («Akvitol») by extraction of dried fruits of sea-buckthorn by mixture of freone and CH<sub>2</sub>Cl<sub>2</sub>. The product has a solid form with melting point from 34°C to 43.5°C. Thus, content of carotenes calculating to β-carotene may range from 240 to 300 mg-percents and tocopherols reach 230 mg-percents. It should be noted, if concentration of β-carotin exceeds 310 mg %, the oil loses its solid form and becomes liquid. Preclinical trials of solid oil showed its higher biological activity comparing to the standard sea-buckthorn oil.

«Akvitol» has radio-modifying activity and stimulates synthesis of hemoglobin. It supported activity of transferases, liver catalases and erythrocytes in the liver of intact animals while the standard oil had depressing effect to enzymes. «Akvitol» oil has also immune-stimulating activity. Toxicity studies proved that «Akvitol» oil disturbed biochemical processes only at dose 1.0 mg/100g, that accomplished with minimum morphological changes, while liquid Standard oil of sea-buckthorn caused unfavorable biochemical effects even at dose 0,5 mg/100 g, increased doses being resulted in considerable morphological changes. Thus, solid sea-buckthorn oil «Akvitol» is less toxic than liquid oil. It causes first toxic changes at molecular level at dose 1,0 mg/100g. That allows determining 0,1 mg/ 100g, as median therapeutic dose and 0,5 mg/100g as maximum therapeutic dose. At determination of locally irritating and allergenic effect, it was established that solid and liquid oils of sea-buckthorn at studied doses (0.1; 0.5 and 1.0 mg of weight) had no locally irritating effect.

Solid sea-buckthorn oil has antiallergenic activity at dose 0.1 mg/100 mg. Its sensibilizing effect is shown only at doses exceeding 0.5 mg/100 g. As for sensibilizing effect of liquid sea-buckthorn oil, it was shown at each tested dose. Thus obtained data on biological activity of oil «Acvitol» allow both to expand the fields of its utilisation and its solid form allows to prepare new medicinal forms such as capsules, the films with prolonged activity etc.