



SUPERCRITICAL FLUID EXTRACT OF REYNOUTRIA SACHALINENSIS AS AN ENVIRONMENTALLY BENIGN AGRICULTURAL CHEMICAL

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Scientists all over the world are looking for a natural fertilizers and fungicides that will be harmless to beneficial insects and animals. Earlier Milsana – an ethanolic plant extract from the giant knotweed, *Reynoutria sachalinensis* (F. Schmidt) Nakai, was shown to be an effective fertilizer protecting plants from powdery mildew fungi, when applied prophylactically [1]. Milsana supposed to be such environmentally friendly chemical. Nevertheless, ethanol can exert negative influence on plants and photosynthetic processes [2]. We made certain of this fact after series of experiments in which we studied fluorescence induction of control and cultivated plants. Chlorophyll *a* fluorescence induction (FI) is now a widespread method used in photosynthesis research. This is because FI is non-invasive and highly sensitive, fast and easily measured, it requires relatively inexpensive equipment, and it contains important information about the photosynthetic apparatus [3].

It has occurred to us to try supercritical fluid extract of *Reynoutria sachalinensis*. We decided not to use an ethanol as the main solvent, but a so-called “green” solvent supercritical carbon dioxide with 10% of ethanol as a co-solvent. Supercritical fluid processing shows numerous advantages compared to traditional organic solvent extraction. In traditional extraction, the residual solvent is unavoidable and is usually measured in parts per million (ppm) [4]. In supercritical fluid extraction with 10% of ethanol, however, there is a little residual ethanol in the final product. Also supercritical fluid extraction allows to get more percentage of desired active compound. We studied FI of control plants and plants cultivated by supercritical fluid extract of *Reynoutria sachalinensis*. FI parameters for cultivated plants were greater than for control plants. We also compared the influence on the plants of the Milsana and supercritical fluid extract of *Reynoutria sachalinensis* in



our experiments. It was elucidated that the supercritical fluid extract of *Reynoutria sachalinensis* showed very good results in all experiments.

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