While at 20,000 mg oil per kg the weight increased by 24 mg. In sample with 20,000 mg/kg of oil and biopreparation Baykal EM-1(sample numbers *3* and *4*), the earthworms' weight increased by 11 mg (K-St, $p<0.05$). There was no significant increase in the *E. fetida* weight in the control sample (sample *1*), and at the oil concentration of 40,000 mg/kg (sample numbers *5* and *6*) it increased by 6–8 mg. An increase in oil concentration led to a reduction of the *E. fetida* weight. At the oil content of 60,000, 80,000 and 100,000 mg/kg, the *E. fetida* mass decreased by 7, 11 and 14 mg, respectively (K-St, $p<0,05$) (Fig. S1).

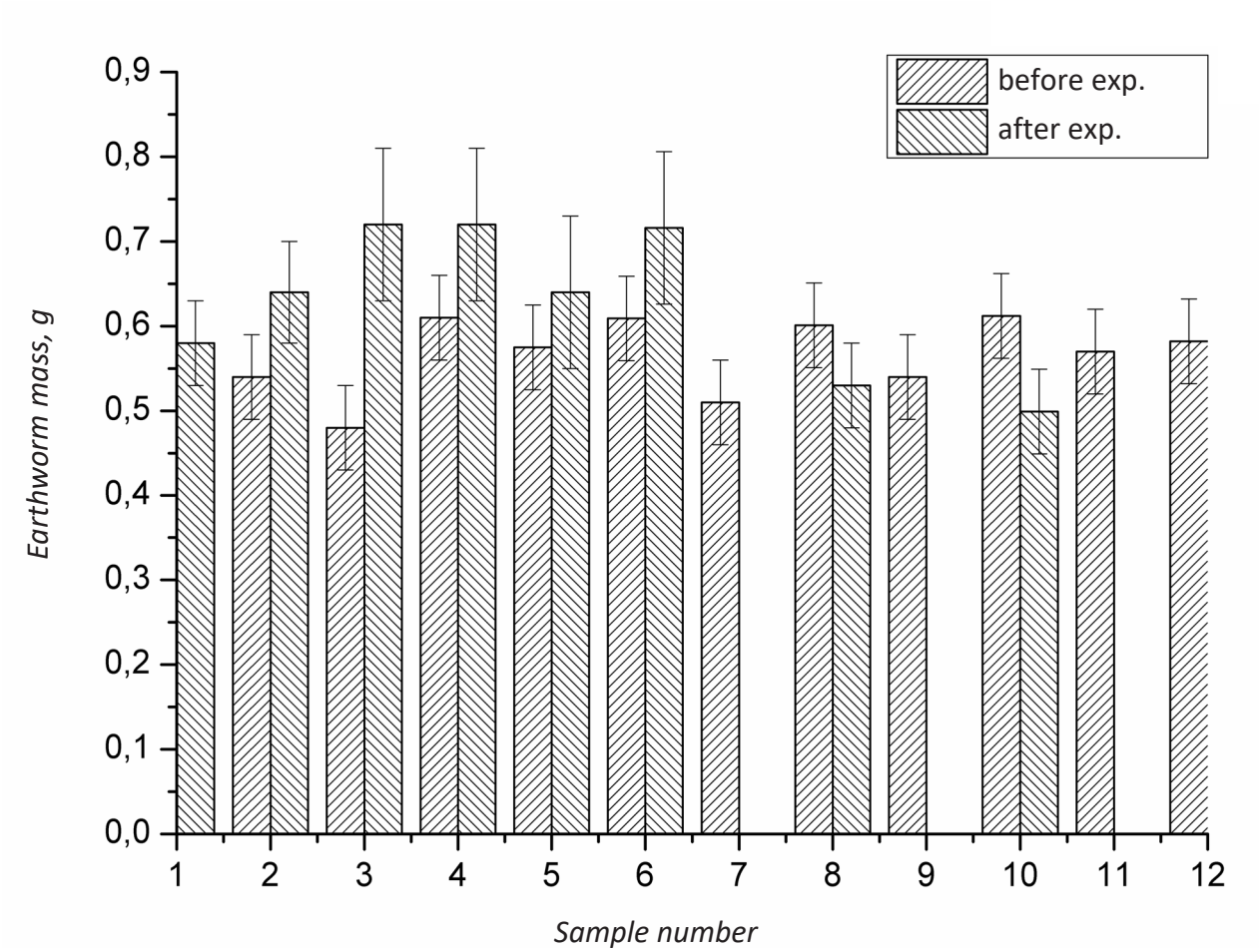

Fig. S1. Changes in the *E. fetida* weight upon incubation of soil samples with different oil content (before and after the 22-week experiment): (*1*)–(*12*) are in consent with soil sample numbers in Table 1 (Text)

The weight of *E. fetida* increased by a factor of 1.4 after 70 days, but decreased by a factor of 2.7 when kept in vermicompost (the pure soil with worms). In our research *E. fetida* weight increased by 11 mg at the microbiological preparation introduction, while the increased oil concentrations resulted in the earthworms' weight decrease up to 7–14 mg.

In the control soil sample without earthworms (20 g/kg, Fig. S2), the addition of oil did not produce a substantial decrease in the hydrocarbons concentration. After 22 weeks, the mineral TPH concentration decreased up to 14,830 mg/kg, whereas the addition of biopreparation Baykal EM-1 decreased it to 9050 mg/kg (20 g/kg + Baykal) With the earthworms introduced into the soil, the TPH content decreased by a factor of 33, i.e. up to 616 mg/kg after 22 weeks of incubation (sample *3*, Fig. S2). When the indicated soil sample was supplemented with Baykal EM-1 and earthworms (sample *4*, Fig. S2), the concentration of TPH in the soil sample decreased by a factor of 45.4, up to 440 mg/kg ($H=9.54$, $p<0.02$).

The addition of oil up to 40,000 mg/kg (40 g/kg, Fig. S2) provided the decrease in the TPH concentration up to 35,700 mg/kg, whereas the addition of biopreparation Baykal EM-1 reduced it up to 20,880 mg/kg after 22 weeks. In the soil sample with *E. fetida* (40 g/kg +Baykal), the TPH concentration decreased by a factor of 34, up to 1170 mg/kg by the end of the incubation for 22 weeks (sample *5*, Fig. S2), whereas in the sample

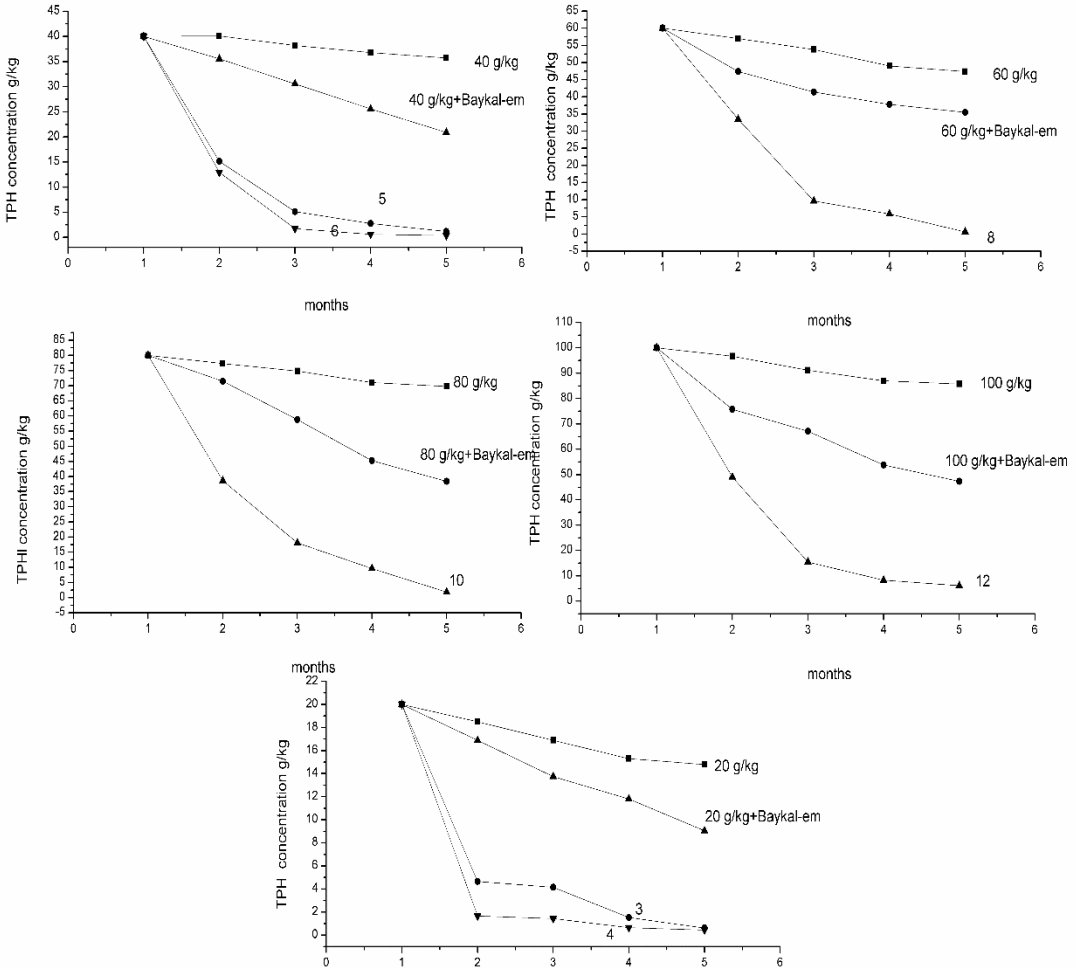

Fig. S2. Dynamics of oil hydrocarbons concentration of in soil upon incubation of soil samples with *E. fetida* earthworms and biopreparation Baykal EM-1 in the laboratory experiment: (*1*)–(*12*) are in consent with soil sample numbers in Table 1 (Text). Composition of additional control (without earthworms) samples is represented straight on curves

with the biopreparation (sample *6*, Fig. S2), the TPH concentration decreased by a factor of 108, up to 370 mg/kg (H=10.55, $p<0.01$).

The addition of 60,000 mg oil per kg reduced the TPH concentration up to 47,400 mg/kg after 22 weeks. In the soil sample containing biopreparation (Baykal EM-1 + 60,000 mg oil per kg), the TPH concentration decreased up to 35,500 mg/kg after the 22-week incubation, and in the the soil sample with *E. fetida* and biopreparation Baykal EM-1 (sample *8*, Fig. S2), the TPH concentration decreased by a factor of 96 after 22 weeks, up to 620 mg/kg (H=7.79, $p<0.02$).

The experimental conditions excluded the relations between soil contamination and *E. fetida* numbers in the 1st week: all the samples contained 10 adult earthworms and their number stayed unchanged for the first 3 weeks. To compare the variants with or without biopreparation Baykal EM-1, the Kruskal-Wallis test, Median, Siegel-Tukey and Ansari-Bradley one-way analyses were performed. The results of the first test for the variants without the biopreparation were equal to 2.7414 (Pr > Chi-Square 0.2539), and for the variants with the biopreparation they made up 0.5572 (Pr > Chi-Square 0.7568). The median one-way analysis for the variants without the biopreparation amounted to 3.7278 (Pr > Chi-Square 0.1551), and for variants with the biopreparation it was 1.6075 (Pr > Chi-Square 0.4477). The Van der Waerden one-way analysis gave the result equal to 3.0150 (Pr > Chi-Square 0.2215) for variants without the biopreparation, and 0.9007 (Pr > Chi-Square 0.6374) for variants with the biopreparation. The Siegel-Tukey one-way analysis for variants without the biopreparation resulted in 1.7373 (Pr > Chi-Square 0.4195), and for variants with the biopreparation, the value was 0.7551 (Pr > Chi-Square 0.6856). The Ansari-Bradley one-way analysis for the variants

without and with the biopreparation showed the value of 1.7522 (Pr > Chi-Square 0.4164) and 0.7625 (Pr > Chi-Square 0.6830), respectively.

When evaluating the results by the significance with Kruskal-Wallis criterion in several independent groups at the soil contamination of 20,000 and 40,000 mg/kg with and without the biopreparation, no statistically significant differences were found. The differences between the following samples were detected: control and experimental with the oil content of 20,000 mg/kg + biopreparation Baykal EM-1 (H (3, N = 48) = 12.94625; p = 0.0048); control and experimental with oil of 40,000 mg/kg (H (3, N = 48) =9.637378; p =0.0219); and control and experimental with oil of 40,000 mg/kg + biopreparation Baykal EM-1 (H (3, N= 48) = 9.637378; p =0.0219). At the oil concentration of 60,000–100,000 mg/kg, some differences between the control sample and that with 100,000 mg oil/kg were observed (H (4, N = 60) = 13.42511; p = .0094), whereas in the other cases, the decrease in the earthworms' amount with increasing oil concentration was registered.

When evaluating the results by the significance with Kruskal-Wallis criterion in several independent groups at the soil contamination of 20,000 and 40,000 mg/kg with and without the biopreparation, no statistically significant differences were found. The differences between the following samples were detected: control and experimental with the oil content of 20,000 mg/kg + biopreparation Baykal EM-1 (sample *4*) (H (3, N = 48) = 12.94625; p = 0.0048); control and experimental with oil of 40,000 mg/kg (sample *5*) (H (3, N = 48) =9.637378; p =0.0219), and control and experimental with oil of 40,000 mg/kg+ biopreparation Baykal EM-1 (sample *6*) (H (3, N=48)= 9.637378; p =0.0219). At the oil concentration of 60,000–100,000 mg/kg, some differences between the control sample and that with 100,000 mg oil/kg were observed (samples *8, 10* and *12*) (H (4, N= 60) =13.42511; p =.0094), whereas in the other cases, the decrease in the earthworms' amount with increasing oil concentration was registered.

The intensity of the correlation relationships between the quantitative characteristics was evaluated by the Spearman's rank correlation coefficient between the characteristics "Total number of earthworms" and "Oil concentration, g/kg". It was shown to be equal to –0.39068 (<.0001). The evaluation of the Spearman's rank correlation coefficients between the above characteristics in the samples without biopreparation Baykal EM-1 was equal to 0.39950 (<.0001), and in the samples containing this compound, it was –0.55374(<.0001). The Spearman's rank correlation coefficients between the characteristics "Total number of earthworms" and "Time of incubation, week" without biopreparation Baykal EM-1 was equal to 0.66716 (<.0001), whereas in the occurrence of the biopreparation it was 0.65368 (<.0001). The evaluation of the Spearman's rank correlation coefficients between the characteristics "Total number of earthworms" and "Oil concentration, g/kg" is given in Table S1.

Table S1

Correlation analysis for the number of earthworms with the soil contamination variables

Time of incubation, week	Without biopreparation Baykal-EM-1				With biopreparation Baykal-EM-1			
	n	r_s	t	p	n	r_s	t	p
1	18	–0.37	–1.60	0.129	18	–0.44	–1.95	0.069
2	18	–0.73	–4.23	0.001	18	–0.73	–4.33	0.001
4	18	–0.73	–4.32	0.001	18	–0.75	–4.57	0.000
6	18	–0.73	–4.32	0.001	18	–0.78	–5.03	0.000
8	18	–0.73	–4.23	0.001	18	–0.70	–3.87	0.001
10	18	–0.73	–4.28	0.001	18	–0.68	–3.69	0.002
12	18	–0.71	–4.07	0.001	18	–0.66	–3.51	0.003
14	18	–0.73	–4.32	0.001	18	–0.58	–2.87	0.011
16	18	–0.72	–4.20	0.001	18	–0.58	–2.85	0.012
18	18	–0.72	–4.15	0.001	18	–0.59	–2.92	0.010
20	18	–0.75	–4.49	0.000	18	–0.59	–2.95	0.009
22	15	–0.84	–5.52	0.000	15	–0.88	–6.81	0.000