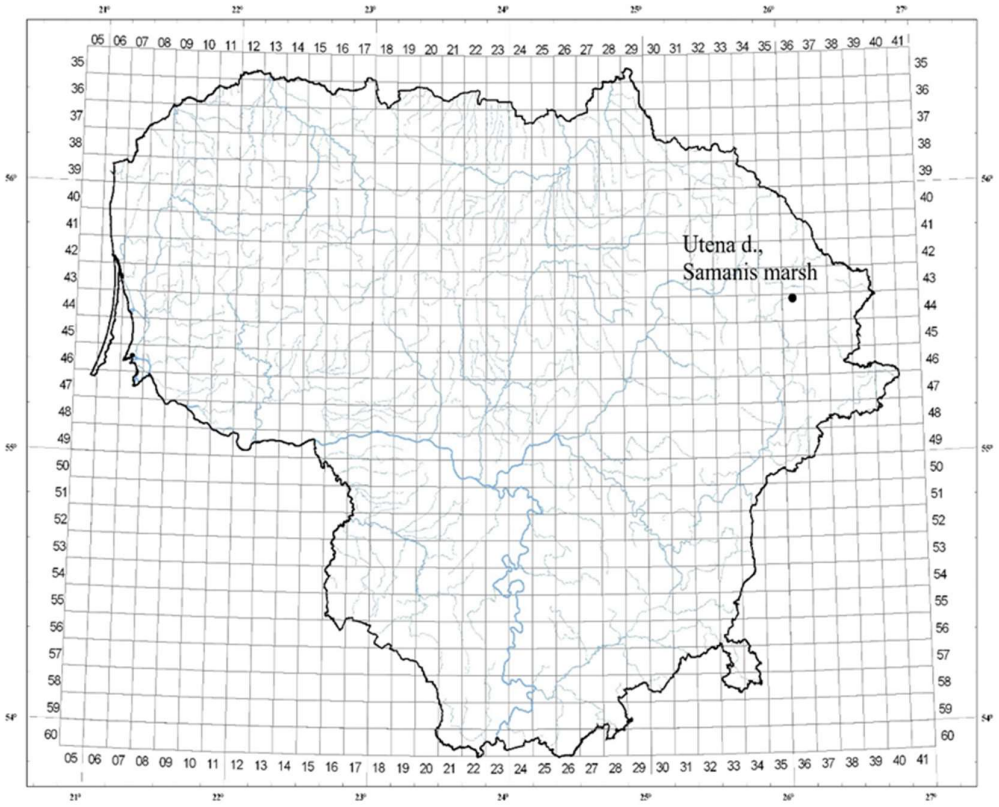

Figure S1. Geographical indication of *Rh. tomentosum* sampling site in Eastern Lithuania (Utena district).

Table S1. Summary of studies on bioactivities of *Rh. tomentosum* Harmaja (ex *Ledum palustre* L.) extracts, essential oils or emitted volatiles.

Activity, Evaluation Method	Product, Main Composition	Results
Repellent against host-seeking nymphs of *Ixodes ricinus* Linnaeus (Acari: Ixodidae) [1]	Extracts in solvents of different polarities and leaf EOs by steam distillation; myrcene, palustrol	EO diluted in acetone (10%) exhibited 95% repellency; extracts in ethyl acetate have shown >70% repellence activity. *I. ricinus* were deterred from feeding when 10% of EO was introduced.
Repellent against mosquitoes *Aedes aegypti* (L.) probing on treated cloth [2]	Extracts in solvents of different polarities, by steam distillation and SPME. Extract of leaf EO in ethyl acetate, *p*-cymene, sabinene, terpinyl acetate	Extracts significantly reduced activity of *Aedes aegypti* (L.): 83.5% repellency (0.5 ml plant extract).
Insect growth regulating and **toxic** effects on the metamorphosis stages of *Tenebrio molitor* (*Coleoptera, Tenebrionidae*), differential thermocouple calorimetry [3]	Leaves and flowers, extracts in 80% of EtOH (composition not indicated)	Non-lethal mild toxic effects of extracts. The timing of normal and failed ecdysis (after treatment with *L. palustre*), the length of intercdysial periods in *T. molitor* pupae, respiratory and muscular responses of poisoned insects was

		measured. The treated pharate pupae transformed into extra-pupal instars, which is a symptom of juvenilizing effect.
Repellent and **antifeedant** effects against *Hylobius abietis* L. and *Phyllodecta laticollis* Suffrian, olfactometry tests [4]	Fresh leaves, extracts in different organic solvents: ethyl acetate, MeOH and hexane; palustrol, ledol, β-myrcene	Feeding by the adults and larvae of *P. laticollis* and *H. abietis* was significantly reduced by methanol and hexane extracts. Concomitant with less feeding, larval growth was retarded by ethyl acetate extract of the plant
Repellence: system *Brassica oleracea* var. *italica* (broccoli)–*Plutella xylostella* (crucifer specialist herbivore) – *Cotesia vestalis* (endoparasitoid of *P. xylostella*) is influenced by exposure to the natural semi-volatiles emitter plant *Rh. tomentosum* [5]	Semi-volatiles emitted from branches, main composition of emissions: palustrol (43%), β-myrcene (34%), aromadendrene (10%), ledol (9%)	*Rh. tomentosum*-exposed *B. oleracea* was less susceptible to *P. xylostella* oviposition at both night-time (12°C) and day-time (22°C) temperatures and less favoured and damaged by *P. xylostella* larvae at 12°C. Exposure did not interfere with indirect defence, *i.e.*, attraction of the natural enemy *C. vestalis* on host-damaged, *R. tomentosum*-exposed *B. oleracea* under 22°C, while there was a reduction in attraction (marginal preference towards host-damaged *B. oleracea*) under 12°C.
Biological **tests on growth** of *Lemna minor* L., and α-amylase activity in wheat seeds and coleoptile sections from 3-day-etiolated wheat sprouts [6]	Leaves and young shoots, EO adsorbed on natural zeolite	Volatile compounds completely inhibited the growth processes of the biotest used.
Analgetic, Anti-inflammatory [7]	EO, aqueous and MeOH extracts (flavonoid components)	Analgesic test: methanol extract (10.0 and 1.0mg/kg) and aqueous extract (10.0mg/kg) decreased the acetic acid-induced writhing response. Anti-inflammatory test: MeOH extract (10.0 and 1.0mg/kg) and aqueous extract (10.0 mg/kg) decreased the paw edema in 2, 3, 4, 5 and 6 hours after lambda-carrageenan administration.
Antibacterial *in vitro,* broth dilution method, against *S. aureus, E. coli*, *P. aeruginosa*, *K. pneumoniae* [8]	Shoots, aqueous extract and isolated polysaccharide complex	Bacteriostatic effect at 1/160 dilution, excluding to *P. aeruginosa* (1/20 dilution) for polysaccharide complex.
Anti-inflammatory *in vivo,* carrageenan-induced edema in rats [8]	Shoots, dry aqueous extract, 40 and 70% in EtOH	51.5±4.6% Inhibition of edema by 40% EtOH extract, comparable to butadione.
Anticancer *in vitro,* mouse leukemia cells L1210 [9]	Aerial part, methylene chloride and MeOH extracts, Soxhlet	99% growth inhibition by methylene chloride extract, 71% growth inhibition by MeOH extract.

Anticancer *in vitro*, human lympho-blastoid Raji cells [10]	Aerial parts, crude EtOH (40%) extract	99% inhibition at 200µg/mL.
Antidiabetic *in vitro,* C2C12 murine skeletal myoblasts and the 3T3-L1 murine preadipocyte cell lines [11] **Antioxidant activity** *in vitro*, DPPH assay, ascorbic acid was used as the reference antioxidant [12]	Leaves, EtOH (80%) extract with 153.5 µg/mg total phenolic (chlorogenic acid, catechins, taxifolin, quercetin glycoside)	Cytoprotective properties under conditions of glucose toxicity (150mmol/L of glucose) and glucose deprivation (1.1mmol/L glucose) at 6.25µg/mL. Effect on the basal and insulin stimulated 3H-deoxy-glucose uptake in differentiated 3T3-L1 adipocytes at 50µg/mL. Triglyceride level was increased by 3-fold. Strong antioxidant activity, close to that of ascorbic acid.
Antidiabetic *in vitro,* Caco-2/15 cells; western blot analysis *in vivo*. Rats, oral glucose tolerance test [12]	Leaves, EtOH (80%) extract with 153.5µg/mg total phenolic	Instantaneous inhibition of differentiated Caco2/15 intestinal cells glucose absorption at 100µg/mL. Reduction of SGLT1 protein expression, AUC of blood glucose levels *in vivo*.
Antifungal, against *A. niger*, *C. albicans*, *M. canis*, *T. rubrum* and *T. mentagrophytes* [13]	EO	EO exhibited antifungal activities from mild to strong.
Antifungal *in vitro*, micro-broth dilution method, against *C. neoformans*, *S. cerevisiae*, *A. niger*, *C. albicans* [14]	Leaves, quercetin 3-β-D-(6-*p*-coumaroyl) galactoside and quercetin 3-β-D-(6-*p*-hydroxy-benzoyl)	MIC 16-63µg/mL for *C. neoformans, S. cerevisiae* and *A. niger*. MIC 250µg/mL for *C. albicans*. MIC 0.16-10µg/mL for amphotericin B and fluconazole.
Anti-inflammatory, subcutaneous carrageenan injection-induced hind paw oedema in rats [15].	Aerial parts, EO by supercritical fluid extraction (SFE) and hydrodistillation (HD). Palustrol (41.0-43.4%), ledol (23.3-26.7%), ascaridole (4.5-15.1%)	EO enhanced a significant inhibition of oedema (50-73%) for HD oil and (52-80%) for SFE oil. These results were similar to those obtained with piroxicam (70%) and ketoprofen (55%).
Anti-inflammatory *in vitro,* prostaglandin-synthesizing cyclooxygenase system from sheep seminal vesicles [16]	Aerial part, EO	EO inhibited cyclooxygenase *in vitro* 46.6% and carvacrol was responsible for 94% inhibition. Ledol did not inhibit the enzyme.
Anti-inflammatory *in vitro,* prostaglandin biosynthesis assay; PAF-induced exocytosis [17]	Aerial parts, aqueous extract, lyophilized	Moderate inhibition of prostaglandin biosynthesis (50%) and platelet activating factor (PAF)-induced exocytosis (71%).
Antimicrobial *in vitro,* against *S. aureus*, S. *pneumoniae*, *C. perfringens*, *B. cereus*, *E. aerogenes*, *K. pneumoniae, C. albicans*, *M. smegmatis*, *A. lwoffii* and .*C krusei* [18]	EO and MeOH extracts, EO main composition: sabinene (17.8%), terpinen-4-ol (7.6%) and myrtenal (7.4%)	EO possessed antioxidant and low antimicrobial properties *in vitro*, while the water-insoluble parts of the methanolic extracts exhibited slight or no antimicrobial activity. EO strongly reduced DPPH* (IC_{50}=1.56µg/ml) formation and exhibited a hydroxyl radical scavenging

Antioxidant *in vitro*, DPPH assay, Fe^{3+}-EDTA-H_2O_2 deoxyribose assay, nonenzymatic lipid peroxidation of rat liver homogenate [18]		effect in the deoxyribose system (IC_{50}= 2.7μg/ml), and inhibited the nonenzymatic lipid peroxidation of rat liver homogenate (IC_{50}=13.5μg/ml). The polar phase of the extract showed antioxidant activity.
Antimicrobial *in vitro,* against *Vibrio parahaemolyticus* [19]	Aerial parts, EO: α-thujenal (22.5%), β-phellandrene (10.3%), benzene,1-methyl-3-(1-methylethyl) (6.6%)	EO at concentration 5g/L inhibited growth of *V. parahaemolyticus* obviously.
Anti-proliferative and **pro-apoptotic** activity *in vitro,* the influence of EOs on blood lymphocytes'proliferation and apoptosis rates of synovia-derived cells was determined by flow cytometry [20]	Shoot EOs of γ-terpineol and palustrol/ledol chemotypes and microshoots cultivated *in vitro* of ledene oxide type	EOs had anti-proliferative and pro-apoptotic activity toward CD4 and CD8 T cells, synovia-infiltrating monocyte/macrophages and fibroblast-like synovial cells. At 1:400 dilutions, all tested EOs increased the number of necrotic cells in synovial fibroblasts from RA synovia; and increased proportions of late apoptotic cells in leucocyte populations.
Antithrombin *in vitro*, thrombin solution from bovine plasma [21]	Aerial parts, MeOH extract, Soxhlet	88% of thrombin inhibition
Hepato-protective *in vivo,* rats, mice, CCl4 intoxication [22]	Shoots, dry extract (EtOH 40%)	Extract reduced hexobarbital sleeping time 1.4-and 3.2-fold, respectively, for rats and mice; and improved functional-metabolic and morphological parameters of liver.
Toxicity *in vivo,* tested on mice [23]	Shoots, 40% EtOH extract, chloroform and hexane fractions of EtOH extract	LD_{50}=2.800–3.200mg/kg for 40% EtOH extract after intraperitoneal administration, and no mortality of mice was after intragastric administration of extract at the dose of 10g/kg. LD_{50} for the chloroform fraction 350mg/kg (intraperitoneal) and 2.600mg/kg (intragastric), LD_{50}=420mg/kg (intraperitoneal) and LD_{50}=5.100mg/kg (intragastric) for hexane fraction.
Radioprotective *in vivo,* mice irradiated with γ-irradiation [24]	Aerial parts, combination with *Archangelica officinalis* extracts	100% of animals survived after a dose of 6Gy (LD50/30); 70% survived after a dose of 7.5Gy (LD90/30), and 25% after a dose of 8Gy (LD100/12) by 30 day.
Radioprotective *in vivo,* 30 days albino mongrel male mice irradiated with γ-irradiation ($LD_{90/30}$) [25]	Aerial parts, combination with *Archangelica officinalis* extracts	Number of mouse pups was 10.2±0.6 in experimental and 7.4±0.7 in non-irradiated groups. The number of both sexes in the posterity of non-irradiated parents was equal; the number of female pups was 2.3 times larger than that of males.

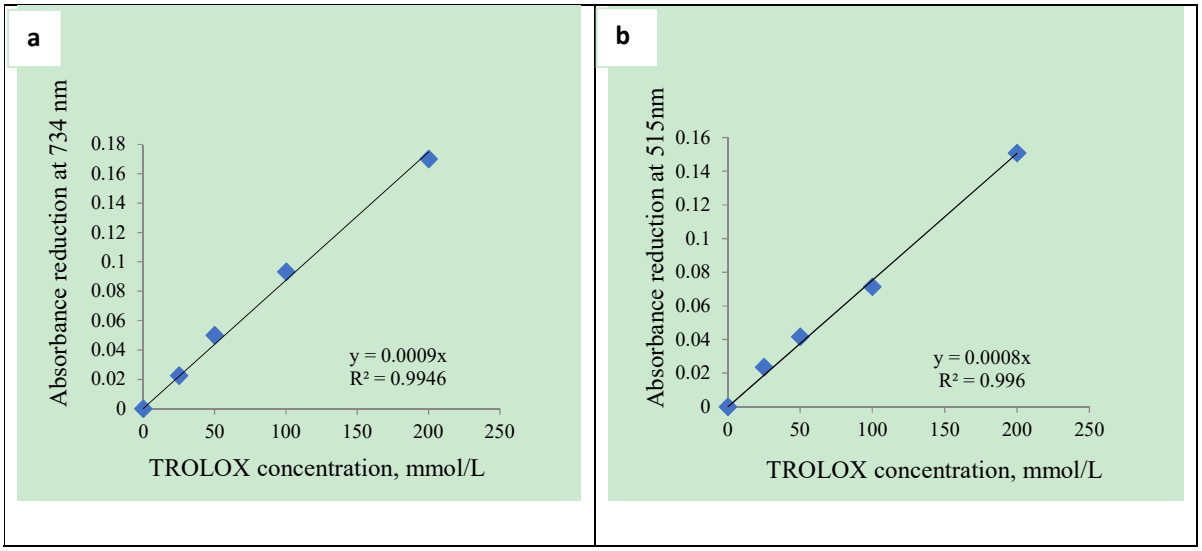

Figure S2. TROLOX standard calibration curves: (**a**) $ABTS^{\bullet+}$ assay; (**b**) $DPPH^{\bullet}$ assay.

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