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Supplementary Materials: Proactive Release of Antimicrobial Essential Oil from a "Smart" Cotton Fabric

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1. Chemical Composition of Savory Essential Oil (EO)

Chemical composition of savory EO is presented in Table S1.

Table S1. Essential oil chromatography sheet records provided by the producer of the used EO (Florihana Distillerie, Caussols, France).

Molecule	Concentration [%]
TRICYCLENE	0.039
ALPHA-THUJENE	0.683
ALPHA-PINENE	1.256
CAMPHENE	0.989
BETA-PINENE	0.240
1-OCTENE-3-OL	0.548
MYRCENE	1.038
3-OCTANOL	0.063
ALPHA-PHELLANDRENE	0.142
DELTA-3-CARENE	0.067
ALPHA-TERPINENE	1.054
PARA-CYMENE	9.034
LIMONENE *	0.526
BETA-PHELLANDRENE	0.205
1,8-CINEOLE (EUCALYPTOL)	1.182
(Z)-BETA-OCIMENE	0.207
(E)-BETA-OCIMENE	0.041
GAMMA-TERPINENE	3.948
CIS-HYDRATE DE SABINENE	0.498
TERPINOLENE	0.157
PARA-CYMENENE	0.051
LINALOL	1.439
CIS-THUJONE	2.530
TRANS-THUJONE	0.449
CAMPHRE	2.266
BORNEOL	2.382
TERPINENE-4-OL	0.942
ALPHA-TERPINEOL	0.252

THYMOL METHYL ETHER	0.137
CARVACROL METHYL-ETHER	2.948
GERANIOL	0.133
ACETATE DE BORNYLE	0.256
THYMOL	6.758
CARVACROL	45.685
ACETATE DE CARVACRYLE	0.047
ALPHA-COPAENE	0.126
BETA-BOURBONENE	0.122
BETA-CARYOPHYLLENE	4.154
BETA-COPAENE	0.072
AROMADENDRENE	0.367
ALPHA-HUMULENE	0.063
ALLO-AROMADENDRENE	0.714
GAMMA-MUUROLENE	0.276
GERMACRENE D	0.225
VIRIDIFLORENE	0.503
BETA-BISABOLENE	0.922
GAMMA-CADINENE	0.147
DELTA-CADINENE	0.321
ALPHA-CADINENE	0.110
SPATHULENOL	0.309
OXYDE DE CARYOPHYLLENE	0.664
VIRIDIFLOROL	0.248
HUMULENE-1,2-EPOXYDE	0.059
Total	97.594

2. Determination of Optimal Concentration of Savory EO

Disk diffusion assay method was used to determine the antimicrobial activity of savory EO. The latter was diluted in dimethyl sulfoxide (DMSO) in 1, 2, 3, 4 and 5 wt.% concentration. The 6 mm discs were impregnated with 20 μL of diluted EO and air-dried in sterile environment (open fire). DMSO impregnated disc were used as control. The dried discs were placed on the agar plate, infused with 200 μL of the bacterial suspension (1×10^5 CFU/mL), where gram negative bacteria *Escherichia coli* (ATCC 25922) and gram positive bacteria *Staphylococcus aureus* (ATCC 6538) were used. Samples were incubated on 37 °C for 24 h and the zone of inhibition was determined. The size of the zone of inhibition proportionally correlates to the degree of antimicrobial activity of the sample.

The DMSO impregnated disc was used as a control, which did not form any zone of inhibition regardless of the used bacteria (Figure S1). On contrary, discs impregnated with savory EO diluted in DMSO formed the zone of inhibition at concentrations as low as 2%, which grew in size with the rising concentrations. The effect was overall greater against the gram positive bacteria *S. aureus*, compared to the gram negative bacteria *E. coli*. At the highest, 5% concentration, atypical zone of inhibition against gram negative bacteria *E. coli* was formed, where the zone of inhibition was stretching 1.95 ± 0.1 mm from the impregnated disc, while another layer of partially damaged bacteria was stretching for another 4.25 ± 0.24 mm. The same sample was highly efficient against *S. aureus*, where 6.75 ± 0.95 mm inhibition zone was formed, therefore, for further research, 5% concentration of savory EO was chosen. Emulsion was prepared and incorporated using *in-situ* procedure on the cotton fibre surface of the samples CO_M1 and CO_M2.

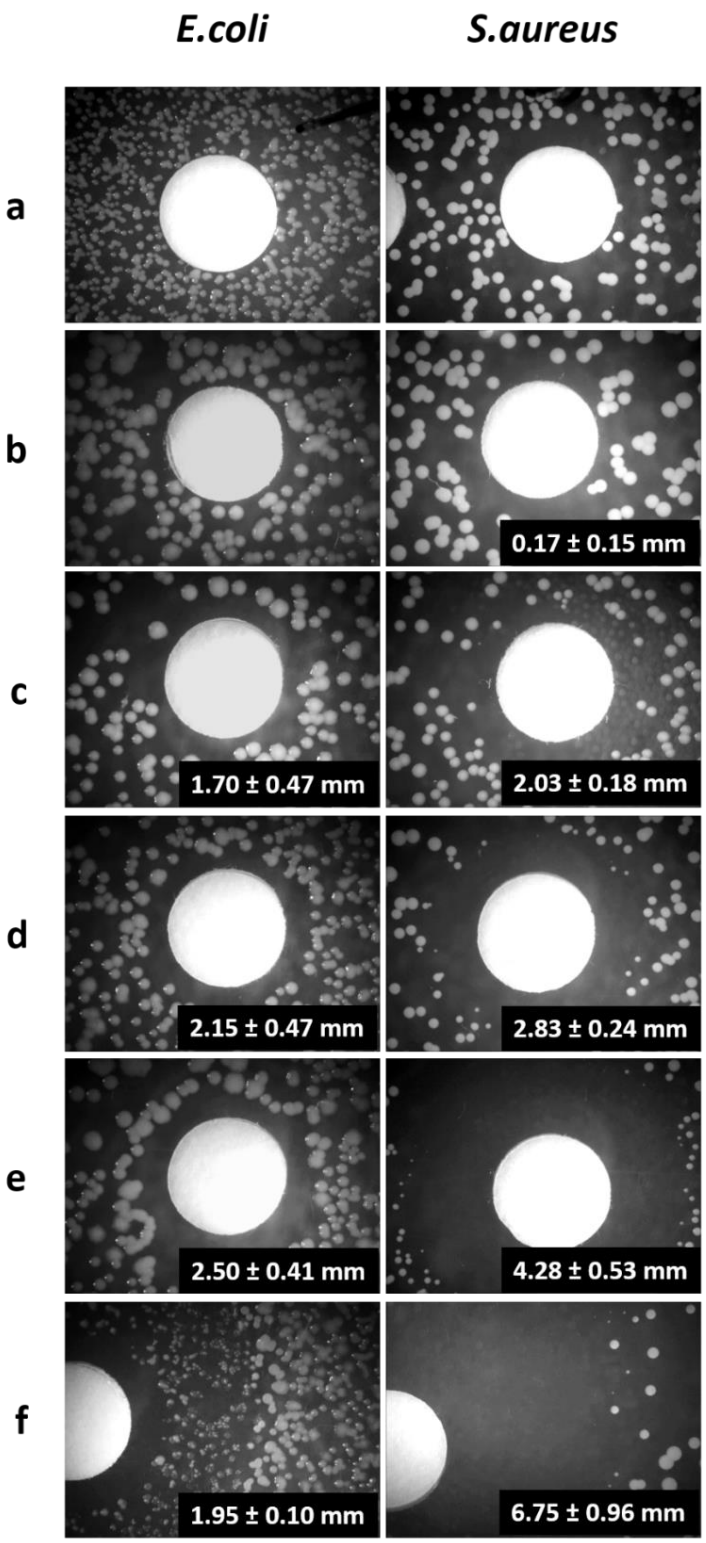

Figure S1. Zone of inhibition of disc impregnated with (**a**)–DMSO, and discs impregnated with (**b**)–1%, (**c**)–2%, (**d**)–3%, (**e**)–4% and (**f**)–5% concentration of savory EO in DMSO.

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