



LIFE + Environment Policy & Governance

ANNEX B.3.1

Deliverable B.3: Technical report with the characteristics (yield, composition, mosquito biocide-repellent activities) of 18 Essential Oils derived from *Citrus* fruits

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LIFE CONOPS (LIFE12 ENV / GR / 000466)

Development & demonstration of management plans against
- the climate change enhanced - Invasive Mosquitoes in S. Europe



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LIFE CONOPS’ Participating Beneficiaries:

 <p>ΜΠΕΝΑΚΕΙΟ ΦΥΤΟΠΑΘΟΛΟΓΙΚΟ ΙΝΣΤΙΤΟΥΤΟ</p>	<p>Benaki Phytopathological Institute (Coordinating Beneficiary)</p>
	<p>Agricultural University of Athens</p>
 <p>SERVIZIO SANITARIO REGIONALE EMILIA-ROMAGNA Azienda Unità Sanitaria Locale di Cesena</p>	<p>Azienda Sanitaria Locale Cesena</p>
 <p>SERVIZIO SANITARIO REGIONALE EMILIA-ROMAGNA Azienda Unità Sanitaria Locale di Ravenna</p>	<p>Azienda Unità Sanitaria Locale Ravenna</p>
 <p>CENTRO agricoltura ambiente "Giorgio Nicoli"</p>	<p>Centro Agricoltura Ambiente “G.NICOLI” S.R.L.</p>
 <p>DEMOKRITOS NATIONAL CENTER FOR SCIENTIFIC RESEARCH</p>	<p>NCSR Demokritos</p>
 <p>ONEX</p>	<p>ONEX S.A.</p>
 <p>Regione Emilia-Romagna</p>  <p>SERVIZIO SANITARIO REGIONALE EMILIA-ROMAGNA Azienda Unità Sanitaria Locale di Ravenna</p>	<p>Regione Emilia-Romagna Public Health Service</p>
 <p>terra nova</p>	<p>TERRA NOVA Environmental Engineering Consultancy Ltd.</p>
	<p>Urban Environment and Human Resources Institute of Panteion University</p>

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This deliverable was implemented in the terms Action B.3 and concerns the: Technical report with the characteristics (yield, composition, mosquito biocide-repellent activities) of 18 Essential Oils derived from Citrus fruits in the framework of LIFE CONOPS PROJECT.

The scientific team involved in the implementation of Action B.3 and the production of current report is composed by:

Name	Expertise	Beneficiary
Serkos Haroutounian	Professor, AUA team coordinator (Chemist)	Agricultural University of Athens Iera Odos 75, Athens 11855 Tel: +30 201 529 4247, +30 210 529 4246 sehar@aua.gr www.aua.gr
Konstantinos Georgiou	Professor of AUA (Chemist)	
Petros Roussos	Assistant Professor of AUA (Agriculturalist)	
Sofia Koulocheri	Chemist Ph.D.	
Georgios Kossyfas	Technician	
Epaminondas Evergetis	Agriculturalist Ph.D.	
Vassiliki – Nafsika Kapsaski-Kanelli	AUA Ph.D. student	
Antonios Michaelakis	Project Coordinator	Benaki Phytopathological Institute Stefanou Delta 8, 14561, Kifissia, Greece Tel: +30 210 8180248 Fax: +30 210 8077506 a.michaelakis@bpi.gr www.bpi.gr
Dimitrios Papachristos	Entomologist, PhD	
Georgios Koliopoulos	Entomologist, PhD	
Dimitris Kontodimas	Entomologist, PhD	
Georgios Partsinevelos	Agriculturalist / Technician, MSc	
Athanasia Mandoulaki	Agromonist MSc / Scientific secretariat	
Evangelos Badieritakis	Entomologist, PhD	
Dimitra Markogiannaki	Agronomist BSc	
Georgios Balagiannis	Chemist, PhD	

SUMMARY

BACKGROUND: *Citrus* sp. Essential Oils (EOs) are recognized as potent mosquito control agents, which are attracting considerable interest due to their vast availability and bioactivity performance/safety for both public and environmental health. Among the various sources of the natural compounds contained in *Citrus* sp., the utilization of juice industry by-products presents a very intriguing case. Herein we exploited thoroughly this subject through the implementation of a correlative study referring to the evaluation of various EOs retrieved from *Citrus* sp., sampled either from industrial sources (mainly as juice making byproducts) and/or their corresponding fruits.

RESULTS: The EOs of four widely cultivated fruits were investigated, namely Lemon, Orange, Grapefruit and Tangerine, along with the fruits of Biter Orange, a widely cultivated ornamental tree, and KoumKouat, a Protected Designation of Origin crop. All EOs were found to display a similar qualitative phytochemical profile, with limonene as the predominant natural compound and significant differences in their quantitative content, especially among the EOs isolated using different approaches.

CONCLUSION: In conclusion, several processed industrial *Citrus* by-products were determined as suitable source of *Citrus* sp. EOs in order to be applied as natural means for the efficient control of mosquitoes. These EOs are vastly available and can be easily transformed to artificial EO with the desired quantitative profile.