


Review Article

Botanical Pesticidal Products in the World and in Pakistan: A Comparative Review

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Supplementary Table 1: Plants-based green products developed for control of insect pests. List is organized primarily by plant species and secondarily by country within each plant species.

Countries where undergoing registration, registered or marketed	Chemical abstract service (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formulation ^c	Concentration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
<i>Allium sativum</i>									
Canada	8000-78-0	32396 ¹	Mosquito Barrier Commercial*	Urban protectant	Bulb/TC	99.30 %	Diptera (Culicidae, Muscidae, Tabanidae)	Upper Canada Organic Products, Inc. Canada	Website ¹
Canada	8000-78-0	32013 ¹	Mosquito Barrier Ready To Use*	Personal protectant	Bulb/NI	5%	Diptera (Culicidae, Muscidae)	Upper Canada Organic Products, Inc. Canada	Website ¹
Canada	8000-78-0	32049 ¹	Mosquito Barrier Hose End Spray-er*	Urban protectant	Bulb/TC	99.3 %	Diptera (Culicidae, Muscidae)	Upper Canada Organic Products, Inc. Canada	Website ¹
Canada	8000-78-0	31022 ¹	Mosquito Barrier*	Personal protectant	Bulb/TC	99.3 %	Diptera (Culicidae)	Upper Canada Organic Products, Inc. Canada	Website ¹
Canada	8000-78-0	30679 ¹	Mosquito-Less Technical*	Personal protectant	Bulb/TC	100%	Diptera (Culicidae)	Alex Milne Associates Ltd, Canada	Website ¹
Canada	8000-78-0	30680 ¹	Mosquito-Less Commercial*	Personal protectant	Bulb/NI	1.25 %	Diptera (Culicidae)	Alex Milne Associates Ltd, Canada	Website ¹
Canada	8000-78-0	30681 ¹	Mosquito-Less*	Personal protectant	Bulb/NI	1.25 %	Diptera (Culicidae)	Alex Milne Associates Ltd, Canada	Website ¹

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Countries where undergoing registration, registered or marketed	Chemical abstract service (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formula-tion ^c	Con-cen-tration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
Canada	8000-78-0	30682 ^I	Mosquito-Less Ready-To-Use*	Personal protectant	Bulb/NI	0.10 %	Diptera (Culicidae)	Alex Milne Associates Ltd, Canada	Website ¹
Canada	8000-78-0	31021 ^I	UC Garlic Juice*	Personal protectant	Bulb/TC	99.3%	Diptera (Culicidae)	Upper Canada Organic Products, Inc. Canada	Website ¹
<i>Brassica juncea</i>									
Canada	NI	30262 ^I	MPT mustard seed meal technical*	NI	NI	100%	NI	MPT Mustard Products and Technologies Inc. Canada*	Website ¹
<i>Brassica napus</i>									
Greece	NI	14397 ^{II}	Spruzit AF*	Agri-cultural protectant	Seed/NI	0.825 %	NI	NI	Website ²
<i>Celastrus angulatus</i>									
China	NI	PD 20101-574 ^{III}	<i>Celastrus angulatus</i> EC 1%*	Agri-cultural protectant	Roots/EC	1%	Lepidoptera (Pieridae)	Henan Xinxiang Dong-feng Chemical Plant	Website ³
China	NI	PD 20101-575 ^{III}	<i>Celastrus angulatus</i> TK 6%*	Agri-cultural protectant	Roots/TK	6%	Lepidoptera (Pieridae)	Henan Xinxiang Dong-feng Chemical Plant	Website ³
China	NI	PD 20151-745 ^{III}	<i>Celastrus angulatus</i> EW 1%*	Agri-cultural protectant	Roots/EW	1%	Lepidoptera (Pieridae)	Shandong Shengpeng Science and Technology Co., Ltd.	Website ³
<i>Chrysanthemum cinerariaefolium</i>									
Greece	NI	190158 ^{II}	Fleriana walk insect repellent*	House-hold protectant	Leaves/AL	0.1%	Blattodea (Blaberidae, Provipax Avee, Greece Blattidae, Corydiidae, Cryptocercidae, Ectobiidae, Lamproblattidae, Nocticolidae and Tryonicidae), Hymenoptera (Formicidae)	NI	Website ²
Greece	NI	190290 ^{II}	Outcide*	Personal protectant	Leaves/AL	3.5%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	N. Koulouridis & Corp. E.E. - "Sanko Greece	Website ²
Greece	NI	190295 ^{II}	Fleriana Insect Repellent Tiles*	Personal protectant	Leaves/MV	1%	Diptera (Culicidae)	Provipax Avee, Greece	Website ²
Greece	NI	190296 ^{II}	Fleriana Insect Repellent Fluid*	Personal protectant	Leaves/AL	0.1%	Diptera (Culicidae)	Provipax Avee, Greece	Website ²
Greece	NI	190299 ^{II}	Fleriana*	Personal protectant	Leaves/FU	0.3%	Diptera (Culicidae)	Provipax Avee, Greece	Website ²
Greece	NI	190312 ^{II}	Repel Fly*	Personal protectant	Leaves/AE	1.92%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	NI	Website ²
Greece	NI	190314 ^{II}	Insectator 6000*	Personal protectant	Leaves/AE	2%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Sense (Kotsakis Marinis), Greece	Website ²
Greece	NI	190317 ^{II}	Scent Plus Air Fly*	Personal protectant	Leaves/AE	3.7%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Mega Systems, Greece	Website ²

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Countries where undergoing registration, service registered or marketed	Chemical abstract (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formulation ^c	Concentration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
Greece	NI	190334 ^{II}	Topsafe Pyrethrins*	Personal protectant	Leaves/AE	0.4%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Darygton Management Limited, Greece	Website ²
Greece	NI	190373 ^{II}	X-Terminator Mega Systems*	Personal protectant	Leaves/AE	1.3%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Mega Systems, Greece	Website ²
<i>Cinnamomum camphora</i>									
Canada	8008-51-3	32954 ^I	Citrobug insect repellent for dogs and horses*	Veterinary protectant	Wood, Bark/NI	0.64%	Diptera (Culicidae, Muscidae, Tabanidae)	Heloise Laboratoire Inc*, Canada	Website ¹
China	NI	WP 20110016 ^{III}	Camphor TC 96%*	Household protectant	Wood, Bark/TC	96%	Coleoptera (Dermestidae)	Fujian Qiongsong Co., Ltd.	Website ³
China	NI	WP 20110024 ^{III}	Camphor DT 94%*	Household protectant	Wood, Bark/DT	94%	Coleoptera (Dermestidae)	Shanghai Ruijia Cleaning Products Co., Ltd	Website ³
China	NI	WP 20110072 ^{III}	Camphor MPT* 94%*	Household protectant	Wood, Bark/NI	94%	Coleoptera (Dermestidae)	Jiangsu Suzhou Yanshi Biological & Daily Chemical Co., Ltd	Website ³
China	NI	WP 20110125 ^{III}	Camphor MPT* 94%*	Household protectant	Wood, Bark/NI	94%	Coleoptera (Dermestidae)	Jiangsu Suzhou Yanshi Biological & Daily Chemical Co., Ltd	Website ³
China	NI	WP 20110126 ^{III}	d-camphor FG 38%*	Household protectant	Wood, Bark/FG	38%	Coleoptera (Dermestidae)	Jiangxi Changrong Natural spices Co., Ltd.	Website ³
China	NI	WP 20100031 ^{III}	d-camphor DT 96%*	Household protectant	Wood, Bark/DT	96%	Coleoptera (Dermestidae)	Jiangxi Changrong Natural spices Co., Ltd.	Website ³
China	NI	WP 20100036 ^{III}	d-camphor DT 96%*	Household protectant	Wood, Bark/DT	96%	Coleoptera (Dermestidae)	Jiangxi Changrong Natural spices Co., Ltd.	Website ³
<i>Citrus limon</i>									
Canada	5989-27-5	29810 ^I	Motherearth Crawling Insect Killer*	Household protectant	Peel/ME	10%	Blattodea (Blaberidae, Blattidae, Corydiidae, Cryptocercidae, Ectobiidae, Lamproblattidae, Nocticolidae, Tryonicidae), Dermaptera (Forficulidae), Hymenoptera (Formicidae), Siphonaptera (Pulicidae) + Thysanura (Lepismatidae)	BASF Canada Inc., Canada	Website ¹
Canada	5989-27-5	29811 ^I	Procitra-DI Crawling Insect Killer*	Household protectant	Peel/ME	10%	Blattodea (Blaberidae, Blattidae, Corydiidae, Cryptocercidae, Ectobiidae, Lamproblattidae, Nocticolidae, Tryonicidae), Dermaptera (Forficulidae), Hymenoptera (Formicidae), Siphonaptera (Pulicidae) + Thysanura (Lepismatidae)	BASF Canada Inc., Canada	Website ¹

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Countries where undergoing registration, service registered or marketed	Chemical abstract (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formulation ^c	Concentration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
Canada	8008-56-8	32954 ^I	Citrobug insect repellent for dogs and horses*	Veterinary protectant	Peel/ME	0.64%	Diptera (Culicidae, Muscidae, Tabanidae)	Heloise Laboratoire Inc*, Canada	Website ¹
Greece	NI	13025 ^{II}	Limocide*	Agricultural protectant	Peel/ME	5.7%	Hemiptera (Aleyrodidae, Aphididae)	Vivagro, Greece	Website ²
<i>Corymbia citriodora</i>									
Canada	42822-86-6	27194 ^I	Off! Botanicals Insect Repellent 1*	Personal protectant, Veterinary protectant	Leaves/NI	10%	Diptera (Culicidae, Tabanidae)	S. C. Johnson and Son, Limited, Canada	Website ¹
Canada	42822-86-6	29313 ^I	Off! Familycare Botanicals Insect Repellent Lotion*	Personal protectant, Veterinary protectant	Leaves/NI	10%	Diptera (Culicidae, Tabanidae)	S. C. Johnson and Son, Limited, Canada	Website ¹
Canada	1245629-80-4	32998 ^I	Druide Insect Repellent With Lemon Eucalyptus*	Personal protectant, Veterinary protectant	Leaves/NI	30%	Diptera (Culicidae, Tabanidae)	Laboratoires Druide Inc., Canada	Website ¹
Canada	1245629-80-4	32987 ^I	Puressentiel Sos Bite & Sting Insect Repellent Spray*	Personal protectant, Veterinary protectant	Leaves/NI	30%	Diptera (Culicidae, Tabanidae)	Laboratoire Puressentiel, Canada	Website ¹
Canada	8000-48-4	32954 ^I	Citrobug Insect Repellent For Dogs And Horses*	Veterinary protectant	Leaves/NI	0.64%	Diptera (Culicidae, Muscidae, Tabanidae)	Heloise Laboratoire Inc*, Canada	Website ¹
Canada	1245629-80-4	32825 ^I	Ecotrail - Lemon Eucalyptus Insect Repellent*	Personal protectant	Leaves/NI	30%	Diptera (Culicidae, Muscidae)	Laboratoires Druide Inc., Canada	Website ¹
Canada	1245629-80-4	30822 ^I	Mosi-Guard Oil Of Lemon Eucalyptus Insect Repellent*	Personal protectant	Leaves/NI	30%	Diptera (Culicidae)	Citrefine International Ltd. Canada	Website ¹
Canada	1245629-80-4	30823 ^I	Natrapel Insect Repellent*	Personal protectant	Leaves/NI	30%	Diptera (Culicidae)	Tender Corporation, Canada	Website ¹
Greece	NI	190031 ^{II}	Fleriana, Mosquito Repellent Lotion*	Personal protectant	Leaves/ML	10%	Diptera (Culicidae)	Provipax Avee, Greece	Website ²
Greece	NI	190054 ^{II}	Bugoff*	Personal protectant	Leaves/NI	5%	Diptera (Culicidae)	Madis S.A. Greece	Website ²
Greece	NI	190056 ^{II}	Oskar Lotion*	Personal protectant	Leaves/NI	10%	Diptera (Culicidae)	Oskar Hellas Ltd. Greece	Website ²
Greece	NI	190058 ^{II}	Macrorepel*	Personal protectant	Leaves/NI	10%	Diptera (Culicidae)	Macrovita A & E. Vassilakaki, Greece	Website ²
Greece	NI	190074 ^{II}	Fleriana, Lice Protector Spray*	Personal protectant	Leaves/AL	11.25%	Phthiraptera (Pediculidae)	Provipax Avee, Greece	Website ²
Greece	NI	190075 ^{II}	Mosquit Off*	Personal protectant	Leaves/SC	5%	Diptera (Culicidae)	Phenomenon General Trading Ltd. Monoprosopi Ltd. Greece	Website ²
Greece	NI	190077 ^{II}	Cobra-X lotion*	Personal protectant	Leaves/NI	5%	Diptera (Culicidae)	Papapetropoulou Maria, Greece	Website ²
Greece	NI	190080 ^{II}	Apaisyl Poux Prevention Spray*	Personal protectant	Leaves/AL	10%	Phthiraptera (Pediculidae)	Petsiabas S.A. Greece	Website ²

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Countries where undergoing registration, service registered or marketed	Chemical abstract (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formulation ^c	Concentration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
Greece	NI	190083 ^{II}	Algogel Insect Repellent*	Personal protectant	Leaves/ AL	8%	Diptera (Culicidae)	A. Mermigki Zacharaki & Co. EE, Canada	Website ²
Greece	NI	190087 ^{II}	EF Roll On*	Personal protectant	Leaves/ ML	30%	Diptera (Culicidae)	Gr. Sarantis Ltd. Greece	Website ²
Greece	NI	190088 ^{II}	EF Spray*	Personal protectant	Leaves/ AL	30%	Phthiraptera (Pediculidae)	Gr. Sarantis Ltd. Greece	Website ²
Greece	NI	190089 ^{II}	EF Cream*	Personal protectant	Leaves/ CM	30%	Diptera (Culicidae)	Gr. Sarantis Ltd. Greece	Website ²
Greece	NI	190090 ^{II}	EF Stick*	Urban protectant	Leaves/ ST	32.09 %	Diptera (Culicidae, Muscidae)	Gr. Sarantis Ltd. Greece	Website ²
Greece	NI	190091 ^{II}	Helpic*	personal protectant	Leaves/ AL	10%	Diptera (Culicidae, Muscidae)	Kallianiotis Dimitrios, Greece	Website ²
Greece	NI	190096 ^{II}	Topsafe Spray*	Personal protectant	Leaves/ AL	10%	Phthiraptera (Pediculidae)	Goodami Trading Ltd. Greece	Website ²
Greece	NI	190105 ^{II}	Nupi Lotion*	Personal protectant	Leaves/ NI	5%	Diptera (Culicidae)	Electrochemica Hellas S. A. Greece	Website ²
Greece	NI	190106 ^{II}	Boss Lotion*	Personal protectant	Leaves/ NI	5%	Diptera (Culicidae)	Paneras N. Dimitrios, Greece	Website ²
Greece	NI	190107 ^{II}	Esquito Lotion*	Personal protectant	Leaves/ NI	10%	Diptera (Culicidae)	Darygton Management Limited, Greece	Website ²
Greece	NI	190109 ^{II}	Flamingo Repellent bracelet*	Personal protectant	Leaves/ VP	94.34 %	Diptera (Culicidae)	Gold Magic Clean M. Ioannou & CO. Greece	Website ²
Greece	NI	190112 ^{II}	Miss Sandy Lotion*	Personal protectant	Leaves/ NI	5%	Diptera (Culicidae)	Miss Sandy Avee, Greece	Website ²
Greece	NI	190113 ^{II}	LO*	Personal protectant	Leaves/ AL	11.5 %	Diptera (Culicidae)	Meis Mepe, Greece	Website ²
Greece	NI	190114 ^{II}	Perkosun Repellent Lotion for Lice*	Personal protectant	Leaves/ AL	10 %	Phthiraptera (Pediculidae)	Meis Mepe, Greece	Website ²
Greece	NI	190115 ^{II}	Chicco Mosquito Roll On*	Personal protectant	Leaves/ ML	7.5 %	Diptera (Culicidae)	Artsana Spa, Igreece	Website ²
Greece	NI	190116 ^{II}	Chicco Mosquito Sprays*	Personal protectant	Leaves/ ML	7.5 %	Diptera (Culicidae)	Artsana Spa, Igreece	Website ²
Greece	NI	190117 ^{II}	Chicco Anti-Mosquito Gel*	Personal protectant	Leaves/ CL	7.5 %	Diptera (Culicidae)	Artsana Spa, Igreece	Website ²
Greece	NI	190120 ^{II}	Zanzara Band*	Urban protectant	Leaves/ VP	32.8 %	Diptera (Culicidae)	Vican N. Anagnostakis S.A. Greece	Website ²
Greece	NI	190130 ^{II}	Zanzara Band Bracelet*	Personal protectant	Leaves/ VP	16.67 %	Diptera (Culicidae)	Vican N. Anagnostakis S.A. Greece	Website ²
Greece	NI	190132 ^{II}	Natgurad Clip 4VP*	Personal protectant	Leaves/ AL	4%	Diptera (Culicidae)	Vioryl S.A. Greece	Website ²
Greece	NI	190134 ^{II}	M-Free lotion*	Personal protectant	Leaves/ AL	8%	Diptera (Culicidae)	BNeF Benefit Hellas A.E. Greece	Website ²
Greece	NI	190136 ^{II}	Katol lotion*	Personal protectant	Leaves/ AL	5%	Diptera (Culicidae)	Papapetropoulos Nikolaos, Greece	Website ²
Greece	NI	190138 ^{II}	ZANZARA JUNIOR lotion*	Personal protectant	Leaves/ AL	5%	Diptera (Culicidae)	Vican N. Anagnostakis S.A. Greece	Website ²
Greece	NI	190142 ^{II}	NATGUARD SPRAY 20%*	Personal protectant	Leaves/ AL	20%	Diptera (Culicidae)	Vioryl SA, Greece	Website ²

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Countries where undergoing abstract registration, service registered or marketed	Chemical (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formula-tion ^c	Concentration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
Greece	NI	190144 ^{II}	Mosi-guard Natural Spray Extra*	Personal protectant	Leaves/ AL	40%	Diptera (Culicidae)	Vioryl SA, Greece	Website ²
Greece	NI	190145 ^{II}	Mosi-guard Natural Spray*	Personal protectant	Leaves/ AL	30%	Diptera (Culicidae)	Vioryl SA, Greece	Website ²
Greece	NI	190146 ^{II}	Mosi-guard Natural Stick*	Personal protectant	Leaves/ EC	32%	Diptera (Culicidae)	Dafni Agrotrade, Greece	Website ²
Greece	NI	190147 ^{II}	Mosi-guard Natural Roll On*	Personal protectant	Leaves/ ME	30%	Diptera (Culicidae)	Dafni Agrotrade, Greece	Website ²
Greece	NI	190152 ^{II}	ZANZARA patch*	Personal protectant	Leaves/ AL	5%	Diptera (Culicidae)	Vican N. Anagnostakis S.A. Greece	Website ²
Greece	NI	190153 ^{II}	Physis Repellent Lotion*	Personal protectant	Leaves/ AL	30%	Diptera (Culicidae)	Prime Solutions S.A. Greece	Website ²
Greece	NI	190154 ^{II}	Physis Repellent Cream*	Personal protectant	Leaves/ CM	30%	Diptera (Culicidae)	Prime Solutions S.A. Greece	Website ²
Greece	NI	190155 ^{II}	Fuzi Lotion*	Personal protectant	Leaves/ AL	5%	Diptera (Culicidae)	Eurochemica, Styl. Papapetropoulos, Greece	Website ²
Greece	NI	190156 ^{II}	Oskar Repellent*	Personal protectant	Leaves/ AL	5%	Diptera (Culicidae)	Astor Hellas S.A Greece	Website ²
Greece	NI	190157 ^{II}	Repelan*	Personal protectant	Leaves/ AL	6%	Diptera (Culicidae)	Novapharm, Vlantis P. Alexiou ltd. Greece	Website ²
Greece	NI	190159 ^{II}	M Free Cream*	Personal protectant	Leaves/ CM	8%	Diptera (Culicidae)	BNeF Benefit Hellas A.E. Greece	Website ²
Greece	NI	190165 ^{II}	Jungle formula strong plants extract*	Personal protectant	Leaves/ AL	36%	Diptera (Culicidae)	Omega Pharma Hellas SA. Greece	Website ²
Greece	NI	190177 ^{II}	Algogel Antilice Lotion*	Personal protectant	Leaves/ AL	8%	Phthiraptera (Pediculidae)	A. Mermigki zacharaki & Co. Ee, Greece	Website ²
Greece	NI	190178 ^{II}	M-free Lice Prevent spray*	Personal protectant	Leaves/ AL	8%	Phthiraptera (Pediculidae)	BNeF Benefit Hellas A.E. Greece	Website ²
Greece	NI	190190 ^{II}	PERFECT CARE COLLAR*	Veterinary protectant	Leaves/ VP	7%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae), Siphonaptera (Pulicidae)	NI	Website ²
Greece	NI	190199 ^{II}	MOSQUITO SHIELD*	Personal protectant	Leaves/ NI	22.06 %	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	V.Y.T.E. Ike, Greece	Website ²
Greece	NI	190200 ^{II}	KIT & COCO spray / foam*	Personal protectant	Leaves/ AL	5.6%	Phthiraptera (Pediculidae)	Kabo-Natura K. Kantounas & Co. OE, Greece	Website ²
Greece	NI	190201 ^{II}	APOTHOL CAT COLLAR*	Veterinary protectant	Leaves/ NI	2.38%	Siphonaptera (Pulicidae)	Tafarm, Ioannis Kon Tatsiramos Ltd, Greece	Website ²
Greece	NI	190202 ^{II}	PERFECT CARE SPRAY*	Veterinary protectant	Leaves/ AL	0.7%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae), Phthiraptera (Pediculidae), Siphonaptera (Pulicidae)	NI	Website ²
Greece	NI	190204 ^{II}	NATGUARD bracelet*	Personal protectant	Leaves/ VP	3.5%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae), Siphonaptera (Pulicidae)	Vioryl, Greece	Website ²

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Countries where undergoing registration, registered or marketed	Chemical abstract service (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formulation ^c	Concentration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
Greece	NI	190205 ^{II}	NATGUARD pet*	Veterinary protectant	Leaves/ VP	3.5%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae), Siphonaptera (Pulicidae)	Vioryl, Greece	Website ²
Greece	NI	190209 ^{II}	KORRES Eucalyptus and blueberry*	Personal protectant	Leaves/ NI	15%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae), Siphonaptera (Pulicidae)	Prime Solutions SA, Greece	Website ²
Greece	NI	190210 ^{II}	NATGUARD fashionable*	Personal protectant	Leaves/ VP	16.6%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Vioryl, Greece	Website ²
Greece	NI	190211 ^{II}	NATGUARD SKIN WIPES*	Personal protectant	Leaves/ VP	5%	Diptera (Culicidae)	Vioryl, Greece	Website ²
Greece	NI	190212 ^{II}	Triamed Lice Repellent*	Personal protectant	Leaves/ NI	9.5%	Phthiraptera (Pediculidae)	Triamen Triantafyllidis A.Menelaos, Greece	Website ²
Greece	NI	190213 ^{II}	ZANZARA FLAT*	Personal protectant	Leaves/ VP	21.28%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Vican N.Anagnostakis S.A, Greece	Website ²
Greece	NI	190214 ^{II}	NATGUARD*	Personal protectant	Leaves/ AL	6%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Vioryl, Greece	Website ²
Greece	NI	190215 ^{II}	FLERIANA mosquito*	Personal protectant	Leaves/ AL	11.13%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Provipax Avee, Greece	Website ²
Greece	NI	190220 ^{II}	SAM loves Betty LT*	Personal protectant	Leaves/ AL	15%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Katsivelis Pavlos, Greece	Website ²
Greece	NI	190222 ^{II}	CER'8 Microcapsules Patch*	Personal protectant	Leaves/ VP	2.74%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Vican N. Anagnostakis S.A. Greece	Website ²
Greece	NI	190225 ^{II}	NOBUGS lotion*	Personal protectant	Leaves/ AL	8%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Voskakis Georgios & Co Ltd. Greece	Website ²
Greece	NI	190227 ^{II}	Care Spray*	Personal protectant	Leaves/ AL	14%	Diptera (Culicidae)	Provipax Avee, Greece	Website ²
Greece	NI	190231 ^{II}	Antiphlebotome Spray*	Veterinary protectant	Leaves/ AL	20%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Tafarm, Ioannis Kon. Tatsiramos Ltd, Greece	Website ²
Greece	NI	190234 ^{II}	Apothol Spray*	Personal protectant	Leaves/ AL	20%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Tafarm, Ioannis Kon. Tatsiramos Ltd, Greece	Website ²
Greece	NI	190242 ^{II}	Pharmalead repellent spray for mosquitoes*	Personal protectant	Leaves/ AL	5%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	Vitorgan Monoprosopi Ltd. Greece	Website ²

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Countries where undergoing registration, service registered or marketed	Chemical abstract (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formulation ^c	Concentration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
Greece	NI	190243 ^{II}	PHAR-MALEAD repellent sticker*	Personal protectant	Leaves/VP	5%	Diptera (Culicidae)	Vitorgan Monoprosopi Ltd. Greece	Website ²
Greece	NI	190244 ^{II}	PHAR-MALEAD anti-lice lotion*	Personal protectant	Leaves/AL	8%	Phthiraptera (Pediculidae)	Vitorgan Monoprosopi Ltd. Greece	Website ²
Greece	NI	190245 ^{II}	CER'8 lotion*	Personal protectant	Leaves/AL	6.5%	Diptera (Culicidae)	Activa Hellas, Greece	Website ²
Greece	NI	190246 ^{II}	BUG OFF Family*	Personal protectant	Leaves/AL	6%	Diptera (Culicidae)	Madis SA, Greece	Website ²
Greece	NI	190247 ^{II}	PHAR-MALEAD*	Personal protectant	Leaves/AL	6%	Phthiraptera (Pediculidae)	Vitorgan Monoprosopi Ltd. Greece	Website ²
Greece	NI	190260 ^{II}	BLOCK MAGIC Anti Mosquitos*	Personal protectant	Leaves/EW	10%	Diptera (Culicidae)	Lidl Hellas and Co. G.P. Greece	Website ²
Greece	NI	190261 ^{II}	Smell well mosquito repellent*	Personal protectant	Leaves/EW	10%	Diptera (Culicidae)	Lidl Hellas and Co. G.P. Greece	Website ²
Greece	NI	190281 ^{II}	CER'8 junior microcapsules patch*	Personal protectant	Leaves/VP	2.2%	Diptera (Culicidae)	Vican N. Anagnostakis SA. Greece	Website ²
Greece	NI	190281 ^{II}	CER'8 junior Microcapsules Patch*	Personal protectant	Leaves/VP	2.2%	Diptera (Culicidae)	Vican N. Anagnostakis SA. Greece	Website ²
Greece	NI	190304 ^{II}	CER 8 band*	Personal protectant	Leaves/VP	28.6%	Diptera (Culicidae)	Vican N. Anagnostakis SA. Greece	Website ²
Greece	NI	190305 ^{II}	ZANZARA CLIP*	Personal protectant	Leaves/VP	30.9%	Diptera (Culicidae)	Vican N. Anagnostakis SA. Greece	Website ²
Greece	NI	190306 ^{II}	Clear Hair the shampoo*	Personal protectant	Leaves/AL	8%	Phthiraptera (Pediculidae)	CLEAR HAIR I.K.E. Greece	Website ²
Greece	NI	190307 ^{II}	Clear Hair the spray*	Personal protectant	Leaves/AL	6%	Phthiraptera (Pediculidae)	CLEAR HAIR I.K.E. Greece	Website ²
Greece	NI	190310 ^{II}	Autan Defense Plant Based Spray*	Personal protectant	Leaves/AL	30%	Diptera (Culicidae)	S. C. Johnson and Son, Limited, Canada	Website ²
Greece	NI	190311 ^{II}	Autan defense plant based lotion*	Personal protectant	Leaves/AL	30%	Diptera (Culicidae)	S. C. Johnson and Son, Limited, Canada	Website ²
Greece	NI	190322 ^{II}	Mosquito Shield Liquid*	Personal protectant	Leaves/AL	30%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae)	V.Y.T.E. IKE, Greece	Website ²
Greece	NI	190337 ^{II}	Ripelito pet 5VP*	Veterinary protectant	Leaves/AL	5%	Diptera (Anisopodidae, Culicidae, Mycetophilidae and Sciaridae), Phthiraptera (Pediculidae)+Siphonaptera (Pulicidae)	Vioryl SA, Greece	Website ²
Greece	NI	190338 ^{II}	Ripelito pet 15%*	Veterinary protectant	Leaves/AL	15%	Diptera (Anisopodidae, Culicidae, Mycetophilidae, Sciaridae and Tabanidae), Phthiraptera (Pediculidae)+Siphonaptera (Pulicidae)	Vioryl SA, Greece	Website ²

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Countries where undergoing registration, service registered or marketed	Chemical abstract (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formula-tion ^c	Con-cen-tration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
Greece	NI	190339 ^{II}	Ripelito pet 5%*	Veterinary protectant	Leaves/ AL	5%	Diptera (Anisopodi-dae, Culicidae, Myce-tophilidae, Sciaridae and Tabanidae), Phthiraptera (Pedicu-lidae)+Siphonaptera (Pulicidae)	Vioryl SA, Greece	Website ²
Greece	NI	190340 ^{II}	Ripelito 10%*	Personal protectant	Leaves/ AL	10%	Diptera (Aniso-podidae, Culicidae, Mycetophilidae and Sciaridae)	Vioryl SA, Greece	Website ²
Greece	NI	190341 ^{II}	Ripelito*	Personal protectant	Leaves/ AL	6%	Diptera (Aniso-podidae, Culicidae, Mycetophilidae and Sciaridae)	Vioryl SA, Greece	Website ²
Greece	NI	190344 ^{II}	Fthiro-X*	Personal protectant	Leaves/ AL	10%	Phthiraptera (Pedicu-lidae)	V.Y.T.E. IKE, Greece	Website ²
Greece	NI	190346 ^{II}	Ento Mats Patch*	Personal protectant	Leaves/ AL	9.1%	Diptera (Culicidae)	Gold Magic Clean M. Ioannou & Co, Greece	Website ²
Greece	NI	190353 ^{II}	Tango Protect*	Personal protectant	Leaves/ AL	5%	Diptera (Culicidae)	Cleanway Ltd, Greece	Website ²
Greece	NI	190356 ^{II}	PharmaLead Insect Repellent Cream*	Personal protectant	Leaves/ CM	5%	Diptera (Culicidae)	Vitorgan Monoprosopi Ltd. Greece	Website ²
Greece	NI	190357 ^{II}	Autan Botanicals Pump Spray*	Personal protectant	Leaves/ AL	30%	Diptera (Culicidae)	SC Johnson Hellas Ltd, Greece	Website ²
Greece	NI	190358 ^{II}	Autan Botanicals Lotion*	Personal protectant	Leaves/ AL	30%	Diptera (Culicidae)	SC Johnson Hellas Ltd, Greece	Website ²
Greece	NI	190371 ^{II}	Pharmasept Insect Lotion*	Personal protectant	Leaves/ AL	8%	Diptera (Culicidae)	Pharmasept Επε, Greece	Website ²
Greece	NI	190375 ^{II}	Mfree Kids*	Personal protectant	Leaves/ AL	5%	Diptera (Culicidae)	BNeF Benefit Hellas A.E. Greece	Website ²
Greece	NI	190376 ^{II}	COMosquito clip*	Personal protectant	Leaves/ VP	26.32 %	Diptera (Culicidae)	ILGeka OE, Greece	Website ²
Greece	NI	190377 ^{II}	COMosquito bracelet*	Personal protectant	Leaves/ VP	29.41 %	Diptera (Culicidae)	ILGeka OE, Greece	Website ²
<i>Cymbopogon nardus</i>									
Canada	8000-29-1	25446 ^I	Insect Repellent Spray Lotion Citronella*	Personal protectant	Leaves/ NI	10%	Diptera (Culicidae)	Laboratoires Druide Inc., Canada	Website ¹
Canada	8000-29-1	25447 ^I	Insect Repellent Moisturizing Milk Citronella*	Personal protectant	Leaves/ NI	5%	Diptera (Culicidae)	Laboratoires Druide Inc., Canada	Website ¹
Eucalyptus Genus									
China	NI	PD 20101270 ^{III}	<i>Eucalyptol</i> SL 5%*	Agri-cultural protectant	Leaves/ SL	5%	Hemiptera (Aphi-didae)	Beijing Agron Bio-Pharm Co., Ltd.	Website ³
China	NI	PD 20101265 ^{III}	<i>Eucalyptol</i> TK 70%*	Agri-cultural protectant	Leaves/ TK	70%	Hemiptera (Aphi-didae)	Beijing Agron Bio-Pharm Co., Ltd.	Website ³
<i>Lavandula x intermedia</i>									
Greece	NI	190374 ^{II}	Para'kito mosquito replacement wrist tablets and clips*	Personal protectant	Flowers/ VP	7.06%	Diptera (Culicidae)	Smart People GR Must Haves, Greece	Website ²

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Countries where undergoing registration, service registered or marketed	Chemical abstract (CAS) no.	Registration No. ^a	Trade name ^b	Sector	Plant part (s)/ formula-tion ^c	Concentration	Claimed target (s) orders and families	Manufacturer	Source (s) ^d
Lonchocarpus Genus									
China	NI	PD 20160583 ^{III}	Rotenone EC 2.5%*	Agricultural protectant	Roots/ EC	2.5%	Hemiptera (Aphididae)	Shandong Rushan Hanwei Bio-Technology Co., Ltd.	Website ³
China	NI	PD 20110891 ^{III}	Rotenone EC 2.5%*	Agricultural protectant	Roots/ EC	2.5%	Hemiptera (Aphididae)	Guangdong Guangzhou Yinong Bio-chemical Co., Ltd.	Website ³
China	NI	PD91105-2 ^{III}	Rotenone EC 2.5%*	Agricultural protectant	Roots/ EC	2.5%	Hemiptera (Aphididae)	Guangzhou Pesticide Plant	Website ³
Mentha × Piperita									
Greece	NI	190336 ^{II}	Pharmasect Plus Spray*	Veterinary protectant	Leaves/ AL	0.2%	Diptera (Anisopodidae, Culicidae, Mycetophilidae, Sciaridae and Tabanidae)	D. A. Koumantos & Co Ltd, Greece	Website ²
Pelargonium graveolens									
Canada	8000-46-2	32954 ^I	Citrobug insect repellent for dogs and horses*	Veterinary protectant	Leaves/ NI	0.64%	Diptera (Culicidae, Muscidae, Tabanidae)	Heloise Laboratoire Inc*, Canada	Website ¹
Pinus sylvestris									
Canada	8000-26-8	32954 ^I	Citrobug insect repellent for dogs and horses*	Veterinary protectant	Leaves/ NI	0.64%	Diptera (Culicidae, Muscidae, Tabanidae)	Heloise Laboratoire Inc*, Canada	Website ¹
Sophora Genus									
China	NI	PD 20170851 ^{III}	Matrine AS 0.3%*	Agricultural protectant	Roots/SC	0.3%	Lepidoptera (Pieridae)	Foshan Gaoming Wang biological Co. Ltd.	Website ³
China	NI	PD 20170120 ^{III}	Matrine AS 1.3%*	Agricultural protectant	Roots/SC	1.3%	Lepidoptera (Pieridae)	North China Pharmaceutical Group Hebei Huanuo Co., Ltd.	Website ³
Stellera chamaejasme									
China	NI	PD 20120876 ^{III}	Neochamaejasmin TK 9.5%*	Agricultural protectant	Roots / TK	9.5%	Lepidoptera (Pieridae)	Gansu Guoli Biotechnology Development Co., Ltd.	Website ³
China	NI	PD 20120877 ^{III}	Neochamaejasmin EW 1.6%*	Agricultural protectant	Roots / EW	1.6%	Lepidoptera (Pieridae)	Gansu Guoli Biotechnology Development Co., Ltd.	Website ³
China	NI	PD 20120877 F160075 ^{III}	Neochamaejasmin EW 1.6%*	Agricultural protectant	Roots / EW	1.6%	Lepidoptera (Pieridae)	Shanxi Pinglu Global Plant Protection Pesticide Plant	Website ³
Veratrum nigrum									
China	NI	PD 20110125 ^{III}	Vertrine SL 0.5%*	Agricultural protectant	Roots/SL	0.5%	Hemiptera (Aphididae), Lepidoptera (Pieridae)	Hebei Handan Jianhua Plant Pesticide Factory	Website ³
China	NI	PD 20110626 ^{III}	Vertrine SL 0.5%*	Agricultural protectant	Roots/SL	0.5%	Hemiptera (Aphididae), Lepidoptera (Pieridae)	Shandong Liaocheng Saide Pesticide Co., Ltd.	Website ³
China	NI	PD 20161004 ^{III}	Vertrine SL 0.5%*	Agricultural protectant	Roots/SL	0.5%	Hemiptera (Aphididae), Lepidoptera (Pieridae)	Hebei Kuoda Bio-Product Co., Ltd.	Website ³

NI, not informed by any consulted sources. a Product is registered by: I Pest Control Products Act, Canada (<https://laws-lois.justice.gc.ca/eng/regulations/sor-2006-124/FullText.html>). II Ministry of Rural Development and Food, Greece (<http://www.minagric.gr/index.php/en/farmer-menu-2/plantprotection-menu/plantprotproducts-menu/1409-legplantprod-art>). III Institute Control of

*Agrochemicals, Ministry of Agriculture, China (<http://www.Chinapesticide.org.cn/sjzx4ywb/index.jhtml>). *b* Availability of product is informed as follows: *active. *c* Formulation type of developed products: AE, Aerosol dispenser; AL, Any other liquid; CL, Contact liquid or Gel; CM, Cream; DT, Tablet for direct application; EC, Emulsifiable concentrate; EW, Emulsion, oil in water; FG, Fine granule; FU, Smoke generator; ME, Micro-emulsion; ML, Milk; MV, Vaporizing Mats; SC, Suspension concentrate; SL, Soluble concentrate; ST, Stick; TC, Technical material; TK, Technical concentrate; VP, Vapour releasing product; NI, not informed by consulted sources. *d* Websites consulted: 1Pest Management Regulatory Agency (PMRA), Canada (<https://pr-rp.hc-sc.gc.ca/ls-re/index-eng.php>) 2Ministry of Rural Development and Food, Greece (http://www.minagric.gr/syspest/syspest_bycat_byActive_eng.aspx) 3China Pesticide Approval Directory, China (<https://client.chemlinked.com/cpad>)*