

SUPPLEMENTARY MATERIAL

Table 1
Table 2
Table 3
Table 4

Table 1 - Plant extracts with *in vitro* and *in vivo* activity against *Haemonchus contortus** (Continue).

Family	Species	Part used	Extract	Major Compounds Identified	Stage tested	Test	Efficacy	References
Agavaceae	<i>Agave sisalana</i>	Leaves	CSR	NA	E	EHI	LC ₅₀ 2.13 mg/ml	Silveira et al. (2012)
	<i>Agave sisalana</i>	Leaves	CSR	NA	L	LDT	LC ₅₀ 0.041 mg/ml	Silveira et al. (2012)
	<i>Agave sisalana</i>	Leaves	CSR	NA	L1	LFIT	LC ₅₀ 0.053 mg/ml	Silveira et al. (2012)
Aizoaceae	<i>Trianthema portulacastrum</i>	Whole plant	ME	NA	E	EHI	LC ₅₀ 2.41 µg/ml	Hussain et al. (2011)
Amaranthaceae	<i>Chenopodium album</i>	Whole plants	AME	NA	E	EHI	LC ₅₀ 0.449 mg/ml	Jabbar et al. (2007)
	<i>Chenopodium album</i>	Whole plants	AME	NA	A	AWMA	12 mg/ml (100%)	Jabbar et al. (2007)
Anacardiaceae	<i>Rhus aromatica</i>	Leaves	ME	NA	E	EHI	LC ₅₀ 0.03 mg/ml	Acharya et al. (2014)
	<i>Rhus aromatica</i>	Leaves	ME	NA	L3	LMIA	LC ₅₀ 4.0 mg/ml	Acharya et al. (2014)
Annonaceae	<i>Annona muricata</i>	Leaves	AE	Phenolic compounds	E	EHI	50% (v/v) (84.91%)	Ferreira et al. (2013)
	<i>Annona muricata</i>	Leaves	AE	Phenolic compounds	L3	LMT	25% (v/v) (89.08%)	Ferreira et al. (2013)

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	<i>Annona muricata</i>	Leaves	AE	Phenolic compounds	A	AWMA	11% (v/v) (100%)	Ferreira et al. (2013)
	<i>Annona squamosa</i>	Leaves and seeds	and ME	Condensed tannins	E	EHI	LC ₅₀ 3.8 mg/ml	Kamaraj and Rahuman (2011)
	<i>Annona squamosa</i>	Leaves and seeds	and EAE	Condensed tannins	L	LDT	LC ₅₀ 3.12 mg/ml	Kamaraj and Rahuman (2011)
Apocynaceae	<i>Catharanthus roseus</i>	Leaves and seeds	and ME	Steroids	L	LDT	LC ₅₀ 4.22 mg/ml	Kamaraj and Rahuman (2011)
	<i>Tabernaemontana citrifolia</i>	Roots	DE	Alkaloid compounds	E	EHI	LC ₅₀ 2.32 mg/ml	Marie-Magdeleine et al. (2010a)
	<i>Tabernaemontana citrifolia</i>	Leaves	ME	Indole alkaloids and flavonoid compounds	L	LDT	LC ₅₀ 0.18 mg/ml	Marie-Magdeleine et al. (2010a)
	<i>Tabernaemontana citrifolia</i>	Roots	AE	Indole alkaloids and flavonoid compounds	L	LDT	LC ₅₀ 0.07 mg/ml	Marie-Magdeleine et al. (2010a)
	<i>Tabernaemontana citrifolia</i>	Roots	ME	Indole alkaloids and flavonoid compounds	L	LDT	LC ₅₀ 0.04 mg/ml	Marie-Magdeleine et al. (2010a)
	<i>Tabernaemontana citrifolia</i>	Roots	DE	Alkaloid compounds	L	LDT	LC ₅₀ 0.03 mg/ml	Marie-Magdeleine et al. (2010a)
	<i>Tabernaemontana citrifolia</i>	Fruits	AE	NA	L	LDT	LC ₅₀ 0.02	Marie-Magdeleine et al. (2010a)
	<i>Tabernaemontana citrifolia</i>	Fruits	ME	Flavonoid compounds	L	LDT	LC ₅₀ 0.02 mg/ml	Marie-Magdeleine et al. (2010a)
	<i>Tabernaemontana citrifolia</i>	Roots	DE	Alkaloid compounds	A	AWMA	LC ₅₀ 0.3 mg/ml	Marie-Magdeleine et al. (2010a)
	<i>Calotropis procera</i>	NA	EAE	Urs-19(29)-en-3-yl acetate, (3β)-Urs-19(29)-en-3-ol, and 1-(2',5'-dimethoxyphenyl)-glycerol	E	EHI	4 mg/ml (91.8%)	Cavalcante et al. (2016)
	<i>Calotropis procera</i>	NA	EAE	Urs-19(29)-en-3-yl acetate, (3β)-Urs-19(29)-en-3-ol, and 1-(2',5'-dimethoxyphenyl)-glycerol	L	LDT	1 mg/ml (99.8%)	Cavalcante et al. (2016)

	<i>Calotropis procera</i>	NA	EDEL	Urs-19(29)-en-3-yl acetate, (3 β)- Urs-19(29)-en-3-ol, and 1-(2',5'- dimethoxyphenyl)-glycerol	A	AWMA	100 μ g/ml (100%)	Cavalcante et al. (2016)
	<i>Saba senegalensis</i>	Leaves	AD	NA	E	EHI	15.00mg/ml (93.63%)	Belemlilga et al. (2016)
	<i>Saba senegalensis</i>	Leaves	AD	NA	A	AWMA	LC ₅₀ 6.79 mg/ml	Belemlilga et al. (2016)
Araceae	<i>Arisaema franchetianum</i>	Whole plants	EO	Linalool, carvacrol and eugenol	E	EHI	LC ₅₀ 1.63 mg/ml	Zhu et al. (2013a)
	<i>Arisaema franchetianum</i>	Whole plants	EO	Linalool, carvacrol and eugenol	L3	LDT	LC ₅₀ 1.10 mg/ml	Zhu et al. (2013a)
	<i>Arisaema franchetianum</i>	Whole plants	EO	Linalool, carvacrol and eugenol	L3	LMIA	10 mg/ml (74.1%)	Zhu et al. (2013a)
	<i>Arisaema lobatum</i>	Whole plants	EO	Carvacrol, linalool and limonene	E	EHI	LC ₅₀ 0.48 mg/ml	Zhu et al. (2013a)
	<i>Arisaema lobatum</i>	Whole plants	EO	Carvacrol, linalool and limonene	L3	LDT	LC ₅₀ 0.73 mg/ml	Zhu et al. (2013a)
	<i>Arisaema lobatum</i>	Whole plants	EO	Carvacrol, linalool and limonene	L3	LMIA	10 mg/ml (95.6%)	Zhu et al. (2013a)
Araliaceae	<i>Hedera helix</i>	Fruits	AE	Polyphenols, saponins, flavonoids, alkaloids, phytosteroids and withanoids	E	EHI	LC ₅₀ 0.12 mg/ml	Eguale et al. (2007)
	<i>Hedera helix</i>	Fruits	HAE	Polyphenols, saponins, flavonoids, alkaloids, phytosteroids and withanoids	E	EHI	LC ₅₀ 0.17 mg/ml	Eguale et al. (2007)
	<i>Hedera helix</i>	Fruits	AE	Polyphenols, saponins, flavonoids, alkaloids, phytosteroids and withanoids	A	AWMA	8 mg/ml (29.17%)	Eguale et al. (2007)
	<i>Hedera helix</i>	Fruits	HAE	Polyphenols, saponins, flavonoids, alkaloids, phytosteroids and withanoids	A	AWMA	8 mg/ml (66.67%)	Eguale et al. (2007)
Arecaceae	<i>Cocos nucifera</i>	Fruits husk fiber	EAE	Catechins, condensed tannins, flavonoids and steroids	E	EHI	LC ₅₀ 2.2 mg/ml	Oliveira et al. (2009)
	<i>Cocos nucifera</i>	Fruits husk fiber	EAE	Catechins, condensed tannins, flavonoids and steroids	L3	LDT	LC ₅₀ 40.56 mg/ml	Oliveira et al. (2009)
Asteraceae	<i>Tagetes filifolia</i>	Aerial parts	ME	Quercetagitrin, chlorogenic acid	L3	Immersion	200 mg/ml (89%)	Jasso-Diaz et al. (2017)

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				and methyl-chlorogenate					
	<i>Tagetes filifolia</i>	Aerial parts	ME	Quercetagitrin, chlorogenic acid and methyl-chlorogenate	E	EHI	10 mg/ml (99%)		Jasso-Diaz et al. (2017)
	<i>Artemisia vestita</i>	Whole plants	ME	NA	A	AWMA	25 mg/ml (100%)		Irum et al. (2015)
	<i>Artemisia maritima</i>	Whole plants	ME	NA	A	AWMA	25 mg/ml (100%)		Irum et al. (2015)
	<i>Ericameria nauseosa</i>	Leaves	ME	NA	E	EHI	LC ₅₀ 0.10 mg/ml		Acharya et al. (2014)
	<i>Ericameria nauseosa</i>	Leaves	E	NA	L3	LMIA	LC ₅₀ 10.43 mg/ml		Acharya et al. (2014)
	<i>Artemisia lancea</i>	NA	EO	1,8-cineole and camphor	E	EHI	LC ₅₀ 1.82 mg/ml		Zhu et al. (2013b)
	<i>Artemisia lancea</i>	NA	EO	1,8-cineole and camphor	L3	LDT	LC ₅₀ 1.66 mg/ml		Zhu et al. (2013b)
	<i>Artemisia lancea</i>	NA	EO	1,8-cineole and camphor	L3	LMIA	10 mg/ml (77.0%)		Zhu et al. (2013b)
	<i>Tagetes minuta</i>	Aerial Parts	AD	Condensed tannins and flavonoids	E	EHI	LC ₅₀ 0.66 mg/ml		Macedo et al. (2012)
	<i>Cichorium intybus</i>	Leaves	SLEE	Lactucin, 8-deoxylactucin and actucopicrin	E	EHI	LC ₅₀ 6.4 mg/ml		Foster et al. (2011)
	<i>Eclipta prostrata</i>	Leaves and seeds	ME	Condensed tannins	L	LDT	LC ₅₀ 4.47 mg/ml		Kamaraj and Rahuman (2011)
	<i>Artemisia absinthium</i>	Aerial parts	AE	NA	A	AWMA	25mg/ml (73.6%)		Tariq et al. (2009)
	<i>Artemisia absinthium</i>	Aerial parts	EE	NA	A	AWMA	25mg/ml (94.7%)		Tariq et al. (2009)
Bromeliaceae	<i>Ananas comosus</i>	Pineapple skin	AE	NA	E	EHI	LC ₅₀ 31 mg/ml		Domingues et al. (2013)
	<i>Ananas comosus</i>	Pineapple skin	AE	NA	L	LDT	LC ₅₀ 1.7 mg/ml		Domingues et al. (2013)
Cactaceae	<i>Opuntia ficus-indica</i>	Cladodes	RAF	Alkaloids, tannins, flavonoids, and saponins	E	EHI	LC ₅₀ 7.2 mg/ml		Feboli et al. (2016)
	<i>Opuntia ficus-indica</i>	Fruits	RAF	Alkaloids, tannins, flavonoids, and saponins	E	EHI	LC ₅₀ 1.5 mg/ml		Feboli et al. (2016)
	<i>Opuntia ficus-indica</i>	Fruits	RHF	Alkaloids, tannins, flavonoids, and saponins	L	LDT	1.56 mg/ml (100%)		Feboli et al. (2016)
	<i>Opuntia ficus-indica</i>	Fruits	REAF	Alkaloids, tannins, flavonoids, and saponins	L	LDT	1.56 mg/ml (100%)		Feboli et al. (2016)

	<i>Opuntia ficus-indica</i>	Cladodes	RAF	Alkaloids, tannins, flavonoids, and saponins	L	LDT	1.56 (100%)	mg/ml	Feboli et al. (2016)
	<i>Opuntia ficus-indica</i>	Cladodes	RAF	Alkaloids, tannins, flavonoids, and saponins	L	LDT	1.56 (100%)	mg/ml	Feboli et al. (2016)
	<i>Opuntia ficus-indica</i>	Fruits	EE	Alkaloids, tannins, flavonoids, and saponins	L3	LMIA	LC ₅₀ 0.27	mg/ml	Feboli et al. (2016)
	<i>Opuntia ficus-indica</i>	Cladodes	EE	Alkaloids, tannins, flavonoids, and saponins	L3	LMIA	LC ₅₀ 0.74	mg/ml	Feboli et al. (2016)
Celastraceae	<i>Maytenus senegalensis</i>	Leaves	ACWE	Proanthocyanidin, procyanidins, oligomeric prodelphinidins	L3	LEIA	300 µg/ml (100%)		Mengistu et al. (2016)
Combretaceae	<i>Terminalia chebula</i>	Leaves and seeds	and ACE	Triterpenoids	E	EHI	LC ₅₀ 4.25	mg/ml	Kamaraj and Rahuman (2011)
	<i>Terminalia chebula</i>	Leaves and seeds	and ACE	Triterpenoids	L3	LDT	LC ₅₀ 4.15	mg/ml	Kamaraj and Rahuman (2011)
	<i>Combretum molle</i>	Leaves	ACWMF	NA	E	EHI	LC ₅₀ 0.065	mg/ml	Ademola and Eloff (2010)
	<i>Combretum molle</i>	Leaves	ACCF	NA	L	LDVA	LC ₅₀ 0.131	mg/ml	Ademola and Eloff (2010)
Cucurbitaceae	<i>Cucurbita moschata</i>	Seeds	AE	Terpenoids, amino acids, compounds, saponosides and cucurbitin	L3	LDT	1.20 (100%)	mg/ml	Marie-Magdeleine et al. (2009)
	<i>Cucurbita moschata</i>	Seeds	ME	Terpenoids, amino acids, compounds, saponosides, cucurbitacin B and cucurbitin	L3)	LDT	0.15 (100%)	mg/ml	Marie-Magdeleine et al. (2009)
	<i>Cucurbita moschata</i>	Seeds	DE	Terpenoids and amino acids compounds	L3	LDT	1.20 (93.3%)	mg/ml	Marie-Magdeleine et al. (2009)
	<i>Cucurbita moschata</i>	Seeds	DE	Terpenoids and amino acids compounds	A	AWMA	75.0 (68.9%)	µg/ml	Marie-Magdeleine et al. (2009)
Ebenaceae	<i>Euclea racemosa</i>	Leaves	ACWE	Proanthocyanidin, procyanidins, prodelphinidins	L3	LEIA	300 µg/ml (100%)		Mengistu et al. (2016)

Ericaceae	<i>Calluna vulgaris</i>	NA	PE	Tannins and other phenolic compounds	L3	LEIA	LC ₅₀ 188.6 µg/ml	Moreno-Gonzalo et al. (2013)
	<i>Erica cinerea</i>	NA	PE	Tannins and other phenolic compounds	L3	LEIA	LC ₅₀ 222.3 µg/ml	Moreno-Gonzalo et al. (2013)
	<i>Erica umbellata</i>	NA	PE	Tannins and other phenolic compounds	L3	LEIA	LC ₅₀ 179.4 µg/ml	Moreno-Gonzalo et al. (2013)
Euphorbiaceae	<i>Euphorbia helioscopia</i>	Aerial Parts	ME	NA	E	EHI	LC ₅₀ 6.9 mg/ml	Lone et al. (2012)
	<i>Euphorbia helioscopia</i>	Aerial Parts	ME	NA	A	AWMA	50 mg/ml (98%)	Lone et al. (2012)
	<i>Jatropha curcas</i>	Seeds	HE	Phytosteroids and phenols	E	EHI	50 mg/ml (15.3%)	Monteiro et al. (2011)
	<i>Jatropha curcas</i>	Seeds	EAE	Phytosteroids and phenols	E	EHI	50 mg/ml (32.2%)	Monteiro et al. (2011)
	<i>Jatropha curcas</i>	Seeds	EE	Tannins, catechins, triterpenes and phenols	E	EHI	LC ₅₀ 8 mg/ml	Monteiro et al. (2011)
	<i>Jatropha curcas</i>	Seeds	EE	Tannins, catechins, triterpenes and phenols	L3	LEIA	1000µg ml (81.1%)	Monteiro et al. (2011)
	<i>Manihot esculenta</i>	Leaves	ME	Catechic tannins and Proanthocyanidols	L	LDT	LC ₅₀ 4.22 mg/ml	Marie-Magdeleine et al. (2010b)
	<i>Croton zehntneri</i>	Aerial parts	EO	Anethole, anisaldehyde and estragole	E	EHI	LC ₅₀ 0.55 mg/ml	Camurça-Vasconcelos et al. (2007)
	<i>Croton zehntneri</i>	Aerial parts	EO	Anethole, anisaldehyde and estragole	L3	LDT	LC ₅₀ 1.17 mg/ml	Camurça-Vasconcelos et al. (2007)
Fabaceae	<i>Acacia cochliacantha</i>	Leaves	HAE	Caffeoyl and coumaroyl derivatives	E	EHI	0.62 mg/ml (100%)	Castillo-Mitre et al. (2017)
	<i>Acacia pennatula</i>	Leaves	ACWE	Polyphenols and Tanins	L3	LEIA	LC ₅₀ 36 µg/ml	Chan-Perez et al. (2017)
	<i>Onobrychis viciifolia</i>	Leaves	ACWE	Polyphenols and Tanins	L3	LEIA	LC ₅₀ 128 µg/ml	Chan-Perez et al. (2017)

<i>Parkia platycephala</i>	Leaves	AE	Phenols, flavones and phytosteroids	L3	LEIA	LC ₅₀ 80 µg/ml	Oliveira et al. (2017)
<i>Parkia platycephala</i>	Leaves	EE	Phenols, flavones and phytosteroids	L3	LEIA	LC ₅₀ 70 µg/ml	Oliveira et al. (2017)
<i>Parkia platycephala</i>	Leaves	AE	Phenols, flavones and phytosteroids	L	LDT	LC ₅₀ 40 µg/ml	Oliveira et al. (2017)
<i>Parkia platycephala</i>	Leaves	EE	Phenols, flavones and phytosteroids	L	LDT	LC ₅₀ 54 µg/ml	Oliveira et al. (2017)
<i>Acacia pennatula</i>	Leaves	ACWE	Polyphenols and Tanins	E	EHI	LC ₅₀ 2203 µg	Chan-Perez et al. (2016)
	Leaves	ACWE	Polyphenols and Tanins	E	EHI	LC ₅₀ 104 µg	Chan-Perez et al. (2016)
<i>Onobrychis viciifolia</i>							
<i>Leucaena retusa</i>	Leaves	SFRLB	Condensed tannins	L3	LMIA	250µl (65.4%)	Naumann et al., (2014)
<i>Leucaena leucocephala</i>	Leaves	ACWE	Condensed tannins	L3	LEIA	LC ₅₀ 212.9 µg/ml	Alonso-Diaz et al. (2011)
<i>Lespedeza stuevei</i>	Leaves	SFRLB	Condensed tannins	L3	LMIA	250µl (63.1%)	Naumann et al. (2014)
<i>Gliricidia sepium</i>	Leaves	ACWLE	Condensed tannins and phenols	other L3	LEIA	1200 µg/ml (100%)	Fernex et al. (2012)
<i>Gliricidia sepium</i>	Leaves	ACWLE	Condensed tannins and phenols	other L3	LMIA	1200 µg/ml (39.2)	Fernex et al. (2012)
<i>Cratylia argentea</i>	Leaves	ACWLE	Condensed tannins and phenols	other L3	LEIA	1200 µg/ml (100%)	Fernex et al. (2012)
<i>Cratylia argentea</i>	Leaves	ACWLE	Condensed tannins and phenols	other L3	LMIA	1200 µg/ml (66%)	Fernex et al. (2012)
<i>Arachis pintoi</i>	Leaves	ACWLE	Condensed tannins and phenols	other L3	LEIA	1200 µg/ml (100%)	Fernex et al. (2012)
<i>Albizia schimperiana</i>	Stem bark	AE	NA	E	EHI	LC ₅₀ 0.11 mg/ml	Eguale et al. (2011)
<i>Albizia schimperiana</i>	Stem bark	HE	NA	L3	LDT	50 mg/ml	Eguale et al. (2011)

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							(99.09%)	
	<i>Senna occidentalis</i>	Aerial parts	AE	NA	E	EHI	LC ₅₀ 0.13 mg/ml	Egualo et al. (2011)
	<i>Havardia albicans</i>	Leaves	ACWE	Condensed tannins	L3	LMIA	1200µg/ml (48.5%)	Alonso-Diaz et al. (2011)
	<i>Havardia albicans</i>	Leaves	ACWE	Condensed tannins	L3	LEIA	75 µg/ml (89.6%)	Alonso-Diaz et al. (2011)
	<i>Acacia gaumeri</i>	Leaves	ACWE	Condensed tannins	L3	LMIA	1200µg/ml (20.9%)	Alonso-Diaz et al. (2011)
	<i>Acacia gaumeri</i>	Leaves	ACWE	Condensed tannins	L3	LEIA	75µg/ml (71.4%)	Alonso-Diaz et al. (2011)
	<i>Acacia nilotica</i>	Fruits	ME	NA	E	EHI	LC ₅₀ 512.86 µg/ml	Bachaya et al. (2009)
	<i>Acacia nilotica</i>	Fruits	ME	NA	L	LDT	LC ₅₀ 194.98 µg/ml	Bachaya et al. (2009)
	<i>Caesalpinia crista</i>	Seeds	AME	NA	E	EHI	LC ₅₀ 0.134 mg/ml	Jabbar et al. (2007)
	<i>Caesalpinia crista</i>	Seeds	AME	NA	A	AWMA	6 mg/ml (100%)	Jabbar et al. (2007)
Geraniaceae	<i>Pelargonium endlicherianum</i>	Roots	ME	NA	E	EHI	LC ₅₀ 0.03 mg/ml	Kozan et al. (2016)
	<i>Pelargonium endlicherianum</i>	Roots	ME	NA	L3	LDT	LC ₅₀ 0.68 mg/ml	Kozan et al. (2016)
Lamiaceae	<i>Hesperozygis myrtoides</i>	Aerial parts	EO	Isomenthone, pulegone, limonene.	L	LDT	LC ₉₀ 0.167 mg/ml,	Castilho et al. (2016)
	<i>Hesperozygis myrtoides</i>	Aerial parts	EO	Isomenthone, pulegone, limonene.	E	EHI	LC ₉₀ 0.797 mg/ml	Castilho et al. (2016)
	<i>Thymus vulgaris</i>	Leaves	EO	Thymol and p-cymene	E	EHI	LC ₅₀ 0.436 mg/ml	Ferreira et al. (2016)
	<i>Thymus vulgaris</i>	Leaves	EO	Thymol and p-cymene	L	LDT	LC ₅₀ 0.0131 mg/ml	Ferreira et al. (2016)
	<i>Thymus vulgaris</i>	Leaves	EO	Thymol and p-cymene	L3	LMT	LC ₅₀ 0.338 mg/mL	Ferreira et al. (2016)
	<i>Thymus capitatus</i>	Aerial Parts	AE	Apigenin and luteolin.	E	EHI	LC ₅₀ 0.368 mg/ml	Elandalousi et al. (2013)
	<i>Thymus capitatus</i>	Aerial Parts	AE	Apigenin and luteolin.	A	AWMA	2 mg/ml (85.71%)	Elandalousi et al. (2013)
	<i>Thymus capitatus</i>	Aerial Parts	EE	Thymol and camphor	E	EHI	LC ₅₀ 6.344 mg/ml	Elandalousi et al. (2013)
	<i>Thymus capitatus</i>	Aerial Parts	EE	Thymol and camphor	A	AWMA	2 mg/ml (100%)	Elandalousi et al. (2013)

	<i>Mentha villosa</i>	Aerial Parts	AD	Condensed tannins and flavonoids	E	EHI	LC ₅₀ 0.5 mg/ml	Macedo et al. (2012)
	<i>Leucas martinicensis</i>	Aerial parts	AE	NA	E	EHI	LC ₅₀ 0.09 mg/ml	Eguale et al. (2011)
	<i>Leucas martinicensis</i>	Aerial parts	HAE	NA	E	EHI	LC ₅₀ 0.09 mg/ml	Eguale et al. (2011)
	<i>Leucas martinicensis</i>	Aerial parts	AE	NA	L3	LDT	50 mg/ml (99.85%)	Eguale et al. (2011)
	<i>Leonotis ocymifolia</i>	Aerial parts	AE	NA	L3	LDT	50 mg/ml (100%)	Eguale et al. (2011)
	<i>Mentha x piperita</i>	NA	EO	Menthol	L1	LFIT	LC ₅₀ 0.07 mg/ml	Katiki et al. (2011)
	<i>Plectranthus punctatus</i>	Leaves	AE	NA	E	EHI	LC ₅₀ 0.11 mg/ml	Tadesse et al. (2009)
	<i>Plectranthus punctatus</i>	Leaves	AE	NA	L	LDT	LC ₅₀ 18.18 mg/ml	Tadesse et al. (2009)
	<i>Plectranthus punctatus</i>	Leaves	HAE	NA	L	LDT	LC ₅₀ 18.45 mg/ml	Tadesse et al. (2009)
Meliaceae	<i>Azadirachta indica</i>	Aerial parts	EE	Flavonoids, condensed tannins, free pentacyclic triterpenoids, saponins and alkaloids	E	EHI	LC ₅₀ 0.97 mg/ml	Costa et al. (2008)
	<i>Azadirachta indica</i>	Aerial parts	EE	Flavonoids, condensed tannins, free pentacyclic triterpenoids, saponins and alkaloids	L	LDT	LC ₅₀ 15.70 mg/ml	Costa et al. (2008)
	<i>Melia azedarach</i>	Fruits	HE	NA	E	EHI	LC ₅₀ 572.2 µg/ml	Cala et al. (2012)
	<i>Melia azedarach</i>	Fruits	HE	NA	L	LDT	LC ₅₀ 0.7 µg/ml	Cala et al. (2012)
	<i>Trichilia clausenii</i>	Leaves	HE	NA	E	EHI	LC ₅₀ 263.8 µg/ml	Cala et al. (2012)
	<i>Trichilia clausenii</i>	Leaves	HE	NA	L	LDT	LC ₅₀ 1.1 µg/ml	Cala et al. (2012)
	<i>Piptadenia viridiflora</i>	Leaves	AE	Polyphenols		EEHI	LC ₉₀ 2.4 mg/ml	Morais-Costa et al. (2016)
Mimoseae	<i>Piptadenia viridiflora</i>	Leaves	EE	Polyphenols	E	EHI	LC ₉₀ 2.1 mg/ml	Morais-Costa et al. (2016)
	<i>Piptadenia viridiflora</i>	Leaves	AE	Polyphenols	L3	LDT	LC ₉₀ 13.66 mg/g	Morais-Costa et al. (2016)

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

Moraceae	<i>Brosimum alicastrum</i>	Leaves	ACWE	NA	L3	LEIA	LC ₅₀ 291.6 µg/ml	Alonso-Diaz et al. (2011)
Moringaceae	<i>Moringa oleifera</i>	Seeds	EE	Tannins	E	EHI	LC ₅₀ 2.91 mg/ml	Cabardo Jr. and Portugaliza (2017)
	<i>Moringa oleifera</i>	Seeds	AE	Saponins	E	EHI	LC ₅₀ 3.83 mg/ml	Cabardo Jr. and Portugaliza (2017)
	<i>Moringa oleifera</i>	Seeds	EE	Tannins	L3	LMT	LC ₅₀ 6.96 mg/ml	Cabardo Jr. and Portugaliza (2017)
	<i>Moringa oleifera</i>	Seeds	AE	Saponins	L3	LMT	LC ₅₀ 4.12 mg/ml	Cabardo Jr. and Portugaliza (2017)
Musaceae	<i>Musa paradisiaca</i>	Leaves	ME	NA	E	EHI	LC ₅₀ 2.13 µg/ml	Hussain et al. (2011)
Myrsinaceae	<i>Maesa lanceolata</i>	Leaves	AE	NA	E	EHI	LC ₅₀ 0.14 mg/ml	Tadesse et al. (2009)
	<i>Maesa lanceolata</i>	Fruits	AE	NA	E	EHI	LC ₅₀ 0.14 mg/ml	Tadesse et al. (2009)
	<i>Maesa lanceolata</i>	Fruits	HAE	NA	E	EHI	LC ₅₀ 0.12 mg/ml	Tadesse et al. (2009)
	<i>Maesa lanceolata</i>	Leaves	AE	NA	L	LDT	LC ₅₀ 10.31 mg/ml	Tadesse et al. (2009)
	<i>Maesa lanceolata</i>	Fruits	HAE	NA	L	LDT	LC ₅₀ 11.92 mg/ml	Tadesse et al. (2009)
Myrtaceae	<i>Melaleuca quinquenervia</i>	Leaves	EO	Longifolene and 1,8-cineole	E	EHI	LC ₅₀ 1.52 mg/ml	Gainza et al. (2015)
	<i>Melaleuca quinquenervia</i>	Leaves	EO	Longifolene and 1,8-cineole	L	LDT	LC ₅₀ 0.44 mg/ml	Gainza et al. (2015)
	<i>Eucalyptus staigeriana</i>	NA	EO	Geranial and geraniol	E	EHI	LC ₅₀ 0.7 mg/ml	Ribeiro et al. (2015)
	<i>Eucalyptus staigeriana</i>	NA	EON	Geranial and geraniol	E	EHI	LC ₅₀ 0.2 mg/ml	Ribeiro et al. (2015)
	<i>Eucalyptus staigeriana</i>	NA	EO	Geranial and geraniol	L	LDT	LC ₅₀ 1.8 mg/ml	Ribeiro et al. (2015)
	<i>Eucalyptus staigeriana</i>	NA	EON	Geranial and geraniol	L	LDT	LC ₅₀ 2.3 mg/ml	Ribeiro et al. (2015)
	<i>Eucalyptus citriodora</i>	NA	EO	Citronellal, citronellol and menthol	E	EHI	LC ₅₀ 1.3 mg/ml	Ribeiro et al. (2014)
	<i>Eucalyptus citriodora</i>	NA	EON	Citronellal, citronellol and menthol	E	EHI	LC ₅₀ 0.4 mg/ml	Ribeiro et al. (2014)
	<i>Eucalyptus citriodora</i>	NA	EO	Citronellal, citronellol and menthol	L	LDT	LC ₅₀ 1.7 mg/ml	Ribeiro et al. (2014)
	<i>Eucalyptus citriodora</i>	NA	EON	Citronellal, citronellol and menthol	L	LDT	LC ₅₀ 1.7 mg/ml	Ribeiro et al. (2014)

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

Phytolaccaceae	<i>Phytolacca icosandra</i>	Leaves	EE	Flavonoids, sterols, terpenoids, coumarins and saponins	E	EHI	0.15 (72.6%)	mg/ml	Hernández-Villegas et al. (2011)
	<i>Phytolacca icosandra</i>	Leaves	DE	Flavonoids, sterols, terpenoids and coumarins	E	EHI	LC ₅₀ 0.28	mg/ml	Hernández-Villegas et al. (2011)
	<i>Phytolacca icosandra</i>	Leaves	EE	Flavonoids, sterols, terpenoids, coumarins and saponins	L3	LMIA	2 mg/ml (55.4%)		Hernández-Villegas et al. (2011)
	<i>Phytolacca icosandra</i>	Leaves	DE	Flavonoids, sterols, terpenoids and coumarins	L3	LMIA	LC ₅₀ 0.90	mg/ml	Hernández-Villegas et al. (2011)
Poaceae	<i>Cymbopogon schoenanthus</i>	NA	EO	Geraniol	E	EHI	LC ₅₀ 0.04	mg/ml	Katiki et al. (2011)
	<i>Cymbopogon schoenanthus</i>	NA	EO	Geraniol	L3	LDT	LC ₅₀ 0.06	mg/ml	Katiki et al. (2011)
	<i>Cymbopogon schoenanthus</i>	NA	EO	Geraniol	L3	LEIA	LC ₅₀ 24.66	mg/ml	Katiki et al. (2011)
	<i>Cymbopogon schoenanthus</i>	NA	EO	Geraniol	L1	LFIT	LC ₅₀ 0.009	mg/ml	Katiki et al. (2011)
	<i>Cymbopogon martinii</i>	NA	EO	Geraniol	L1	LFIT	LC ₅₀ 0.03	mg/ml	Katiki et al. (2011)
Polygonaceae	<i>Rumex abyssinicus</i>	Aerial parts	AE	NA	E	EHI	LC ₅₀ 0.11	mg/ml	Egualé et al. (2011)
Rhamnaceae	<i>Ziziphus jujuba</i>	Leaves	BSNAE	NA	E	EHI	LC ₅₀ 0.007	ppm	Preet and Tomar (2017)
	<i>Ziziphus jujuba</i>	Leaves	AE	NA	E	EHI	LC ₅₀ 301.83	ppm	Preet and Tomar (2017)
	<i>Ziziphus jujuba</i>	Leaves	BSNAE	NA	A	AWMA	LC ₅₀ 15.29	ppm	Preet and Tomar (2017)
	<i>Ziziphus jujuba</i>	Leaves	AE	NA	A	AWMA	LC ₅₀ 942.68	ppm	Preet and Tomar (2017)
	<i>Ziziphus nummularia</i>	Barks	ME	NA	E	EHI	LC ₅₀ 676.08	µg/ml	Bachaya et al. (2009)
	<i>Ziziphus nummularia</i>	Barks	ME	NA	L3	LDT	LC ₅₀ 398.11	µg/ml	Bachaya et al. (2009)
Rosaceae	<i>Rubus ulmifolius</i>	Fruits	AE	Polyphenols, flavonoids, condensed tannins	E	EHI	LC ₉₀ 2.08	mg/ml	Akkari et al. (2016)
	<i>Rubus ulmifolius</i>	Fruits	AE	Polyphenols, flavonoids, condensed tannins	A	AWMA	8 mg/ml (100%)		Akkari et al. (2016)

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

Rutaceae	<i>Ruta chalepensis</i>	Leaves	EO	2-Undecanone, 2-Decanone and Piperazine	E	EHI	LC ₅₀ 0.145 mg/ml	Akkari et al. (2015)
	<i>Ruta chalepensis</i>	Flowers	EO	2-Undecanone, 2-Decanone ethyl-2-piperonyl carbazate	E	EHI	LC ₅₀ 0.398 mg/ml	Akkari et al. (2015)
	<i>Ruta chalepensis</i>	Leaves	EO	2-Undecanone, 2-Decanone Piperazine	A	AWMA	1 mg/ml (75%)	Akkari et al. (2015)
	<i>Ruta chalepensis</i>	Flowers	EO	2-Undecanone, 2-Decanone ethyl-2-piperonyl carbazate	A	AWMA	1 mg/ml (87.5%)	Akkari et al. (2015)
	<i>Citrus sinensis</i>	Peels	EO	Limonene	E	EHI	LC ₅₀ 0.27 mg/ml	Gainza et al. (2015)
	<i>Citrus sinensis</i>	Peels	EO	Limonene	L	LDT	LC ₅₀ 0.97 mg/ml	Gainza et al. (2015)
	<i>Zanthoxylum simulans</i>	Aerial parts	EO	Borneol and β-elemene	E	EHI	LC ₅₀ 3,98 mg/ml	Qi et al. (2015)
	<i>Zanthoxylum simulans</i>	Aerial parts	EO	Borneol and β-elemene	L	LDT	LC ₅₀ 4,02 mg/ml	Qi et al. (2015)
	<i>Zanthoxylum simulans</i>	Aerial parts	EO	Borneol and β-elemene	L3	LMIA	8 mg/ml (74.3%)	Qi et al. (2015)
Turneraceae	<i>Turnera ulmifolia</i>	Leaves	EE	Coumarins, flavones, phytosteroids and saponins	E	EHI	LC ₅₀ 430 µg/ml	Oliveira et al. (2017)
Verbenaceae	<i>Lippia sidoides</i>	NA	EO	Thymol, caryophyllene cymene	(E) and E	EHI	LC ₅₀ 0.40 mg/ml	Camurça-Vasconcelos et al. (2007)
	<i>Lippia sidoides</i>	NA	EO	Thymol, caryophyllene cymene	(E) and L3	LDT	LC ₅₀ 2.97 mg/ml	Camurça-Vasconcelos et al. (2007)
Zingiberaceae	<i>Alpinia zerumbet</i>	Aerial Parts	AD	Condensed tannins and flavonoids	E	EHI	LC ₅₀ 0.96 mg/ml	Macedo et al. (2012)

*Main studies from 2007 to 2017. EHI: Egg hatching inhibition; LEIA: larval exsheathment inhibition assay; LDT: Larval Development Test; AWMA: Adult worm motility assay; LMT: Larval motility test; LMIA: Larval migration inhibition assay; LDVA: Larval development and viability assay; LFIT: Larval feeding inhibition test.; L: Larvae at first, second and third stages; L3: Third stage larvae; L1: First stage larvae; A: adult worms; E: eggs. CSR: Concentrated extract from shredded leaves resuspended in water; ME: Methanolic extract; AME: Aqueous methanolic extract; AE: Aqueous extract; EAE: Ethyl acetate extract; DE: Dichloromethane extract; EAEL: Ethyl acetate extract of latex; AD: Aqueous decoction; EO: Essential oil; EON: Essential oil nanoemulsion; HAE: Hydro-alcoholic extract; SLEE: Sesquiterpene lactone enriched extract; EE: Ethanolic extract; RAF: Residual aqueous fraction; RHF: Residual hexane fraction; REAF: Residual ethyl acetate fraction; ACWE: Acetone:water extract; ACE: Acetone extract; ACWLE: Acetone:water lyophilized extract; ACWMF: Acetone extract: 35% water in methanol fraction; ACECF: Acetone extract: chloroform fraction; PE: Phenolic extracts; HE: Hexanic extract; SFRLB: Supernatant of fermentation with filtered rumen fluid and buffer; BSNAE: Biofabricated silver nanoparticles using aqueous extract.

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

Table 2 - Plant extracts with *in vitro* activity against cattle tick *Rhipicephalus microplus** (Continue).

Family	Plant	Part used	Extract	Major Compounds	Stage tested	Test	Efficacy	References
Asteraceae	<i>Calea serrata</i>	Leaves and stems	HE	NA	NHL	LIT	6.25mg/mL (100%)	Ribeiro et al. (2008)
	<i>Calea serrata</i>	Aerial parts	EO	Precocene II (29.6%), Germacrene D (26.4%)	NHL	LIT	2.5µl/mL (95.67%)	Ribeiro et al. (2011)
	<i>Tagetes minuta</i>	Leaves and stems	EO	Dihydrotagetone (54.21%), Limonene (6.96%)	A	AIT	20% (95%)	Garcia et al. (2012)
	<i>Tagetes minuta</i>	Leaves and stems	EO	Dihydrotagetone (54.21%), Limonene (6.96%)	NHL	LPT	10% (92.5%)	Garcia et al. (2012)
	<i>Baccharis trimera</i>	Leaves	AE	NA	A	AIT	150 mg/mL (100%)	Lázaro et al. (2013)
	<i>Acmella oleracea</i>	Aerial parts	HE	Spilanthol (14.8 %)	A	AIT	150.0 mg/mL (98.2%)	Castro et al. (2014)
	<i>Acmella oleracea</i>	Aerial parts	HE	Spilanthol (14.8 %)	NHL	LPT	1.6 mg/mL (93.8%)	Castro et al. (2014)
	<i>Artemisia absinthium</i>	Aerial parts	EE	NA	A	AIT	LC ₅₀ 11.22%	Parveen et al. (2014)
	<i>Baccharis dracunculifolia</i>	Aerial parts	EO	Nerolidol (22.3%); limonene (6.9%)	A	AIT	15.0 mg/mL (99.6%)	Lage et al. (2015)
	<i>Acmella oleracea</i>	Leaves	ME	Spilanthol	NHL	LPT	1.6 mg/mL (98.1%)	Cruz et al. (2016)
	<i>Acmella oleracea</i>	Leaves	ME	Spilanthol	A	AIT	150.0 mg/mL (99.6%)	Cruz et al. (2016)
	<i>Ageratum conyzoides</i>	Leaves and stems	HE	6,7-Dimethoxy-2,2-dimethyl-2H-1-benzopyran (55.88%)	A	AIT	LC ₅₀ 3.2%	Kumar et al. (2016)
Amaryllidaceae	<i>Allium sativum</i>	Bulbs	EO	Diallyl trisulfide (33.57%), Diallyl disulfide (30.93%)	NHL	LPT	2.5% (92.05%)	Martinez-Velazquez et al. (2011)
	<i>Allium sativum</i>	Cloves	ME	NA	A	AIT	100 mg/mL (80.0%)	Shyma et al. (2014)
nonaceae	<i>Annona squamosa</i>	Fruit peel	AE	1H-Cycloprop[e]azulen-7-ol, decahydro-1,1,7-trimethyl-4-methylene-[1ar-(1α, 4α, 7β, 7 a, β,	NHL	LPT	LC ₅₀ 548.28 mg/L	Madhumitha et al. (2012)

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

				7b α]- (28.55%), (-)-Spathulenol (20.75%)				
Araceae	<i>Acorus calamus</i>	Rhizome	ME	α -asarone(%NA)	AITA		9%(100.0%)	Ghosh et al (2011)
Apiaceae	<i>Cuminum cyminum</i>	Seeds	EO	Cuminaldehyde (22.03%), γ -Terpinene (15.69%)	NHL	LPT	1.25% (100%)	Martinez-Velazquez et al. (2011)
Bromeliaceae	<i>Neoglaziovia variegata</i>	Leaves	EE	Isoquercetin	A	AIT	(92.55%) 25mg/mL	Dantas et al. (2015)
Caesalpinioideae	<i>Copaifera reticulata</i>	Trunk of the tree	OR	NA	NHL	LPT	LC ₅₀ 1.58 mg/mL	Fernandes and Freitas (2007)
Campanulaceae	<i>Lobelia leschenaultiana</i>	Leaf	EE	NA	A	AIT	0.04mg/mL (93.33%)	Banumathi et al. (2016)
	<i>Lobelia leschenaultiana</i>	Leaf	NP-ZnO	NA	A	AIT	LC ₅₀ 0.0017 mg/mL	Banumathi et al. (2016)
Caricaceae	<i>Carica papaya</i>	Seeds	ME	NA	A	AIT	100mg/mL (93.33%)	Shyma et al. (2014)
Euphorbiaceae	<i>Croton sphaerogynus</i>	Leaves	DE	Abieta-8,11-diene-3-one (20.2%), Podocarp-7-ene,13-methyl-13-vinyl-3-one (12.9%)	NHL	LPT	20.0%(99.32%)	Righi et al. (2013)
Fabaceae	<i>Calpurnia aurea</i>	Leaves and flowers	and EE	NA	NHL	LPT	1% (100%)	Wellington et al. (2017)
Guttiferae	<i>Hypericum polyanthemum</i>	Aerial parts	HE	NA	NHL	LIT	6.25mg/mL (100%)	Ribeiro et al. (2007)
Gramineae	<i>Cymbopogon martinii</i>	NA	EO	Geraniol (35.27%)	A	AIT	1% (99.7%)	Pazinato et al. (2016)
Lamiaceae	<i>Cunila incana</i>	Aerial parts	EO	B-Pinene (27.5%), α -Pinene (26.7%)	NHL	LIT	2.5 μ l/mL (100%)	Apel et al. (2009)
	<i>Hesperozygis ringens</i>	Leaves	EO	Pulegone (86.0%), Limonene (2.2%)	NHL	LIT	LC ₅₀ 0.260 μ l/mL	Ribeiro et al. (2010)
	<i>Hesperozygis ringens</i>	Leaves	EO	Pulegone (86.0%), Limonene (2.2%)	A	AIT	50 μ l/mL (76.4%)	Ribeiro et al. (2010)
	<i>Tetradenia riparia</i>	Leaves	EO	NA	A	AIT	1.80%(100%)	Gazim et al. (2011)
	<i>Ocimum urticaefolium</i>	Leaves	EO	Eugenol (33%), Elemicin (18.1%)	NHL	LPT	1.25% (90.71%)	Hue et al. (2015)
	<i>Hesperozygis myrtooides</i>	Aerial parts	EO	Isomenthone (47.7%), Pulegone (21.4%)	NHL	LPT	25.0mg/mL (100%)	Castilho et al. (2016)

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

Lauraceae	<i>Ocotea aciphylla</i>	Leaves	EE	Squalene, cadalene, dillapiole	NHL	LIT	50 mg/mL (92.8%)	Conceição et al. (2016)	
	<i>Cinnamomum verum</i>	Leaves	EO	Benzyl benzoate (65.4%), linalool (5.4%)	NHL	LPT	LC ₅₀ 1.00 mg/mL	Monteiro et al. (2017)	
	<i>Cinnamomum verum</i>	Leaves	EO	Benzyl benzoate (65.4%), linalool (5.4%)	A	AIT	LC ₅₀ 60.78 mg/mL	Monteiro et al. (2017)	
Meliaceae	<i>Azadirachta indica</i>	Seeds	EE	Azadirachtin (10.000ppm)	A	AIT	10% (94.67%)	Giglioti et al. (2011)	
Phytolaccaceae	<i>Petiveria alliacea</i>	Leaves and stems	HE	Dibenzyltrisulfide (63.1%), Dibenzyldisulfide (32.5%)	NHL	LIT	10% (93.6%)	Rosado-Aguilar et al. (2010)	
Pinaceae	<i>Cedrus atlantica</i>	NA	EO	A-himachalene (19.74%)	A	AIT	1% (100%)	Pazinato et al. (2016)	
Piperaceae	<i>Piper aduncum</i>	Leaves	HE	Dillapiole (94.84%), (1.91%)	Croweacin	A	AIT	100mg/mL (54.22%)	Silva et al. (2009)
	<i>Piper aduncum</i>	Leaves	HE	Dillapiole (94.84%), (1.91%)	Croweacin	NHL	LIT	20mg/mL (70.42%)	Silva et al. (2009)
	<i>Piper mikanianum</i>	Aerial parts	EO	Apiole (64.89%); Germacrene B (7.8%)		NHL	LIT	LC ₅₀ 2.33 µl/mL	Ferraz et al. (2010)
	<i>Piper tuberculatum</i>	Fruits	HE	piperine		NHL	LIT	LC ₅₀ 0.04 mg/mL	Lima et al. (2014)
Poaceae	<i>Chrysopogon zizanioides</i>	Roots	EO	Khusimol (16.28%), (8.94%)	Isovalencenol	A	AIT	100µl/ mL (100%)	Campos et al. (2015)
	<i>Chrysopogon zizanioides</i>	Roots	EO	Khusimol (16.28%), (8.94%)	Isovalencenol	NHL	LPT	LC ₅₀ 1.552µl/ mL	Campos et al. (2015)
	<i>Cymbopogon citratus</i>	NA	EO	Geranial (46.52%)		A	AIT	1% (100%)	Pazinato et al. (2016)
Rubiaceae	<i>Palicourea marcgravii</i>	Leaves	EAE	Monofluoroacetic acid (0.12%)		A	AIT	LC ₅₀ 30.08 mg/mL	Silva et al. (2011)
Sapotaceae	<i>Manilkara zapota</i>	Leaves	AE	NA		NHL	LPT	50.0mg/L (75%)	Rajakumar and Rahuman (2012)
	<i>Manilkara zapota</i>	Leaves	NP-AgNPs	NA		NHL	LPT	20.0mg/L (100%)	Rajakumar and Rahuman (2012)
Verbenaceae	<i>Lippia graveolens</i>	Leaves	EO	Thymol (24.59%), Carvacrol (24.54%)		NHL	LPT	1.25% (94.42%)	Martinez-Velazquez et al. (2011)

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

	<i>Lippia sidoides</i>	Leaves	EO	Thymol(67.60%), Carvacrol (6.3%)	NHL	LPT	10.0 µl/ml (96.7%)	Gomes et al. (2012)
	<i>Lippia gracilis</i>	Leaves	EO	Thymol (59.26%), β-Caryophyllene (8.57%)	A	AIT	LC ₅₀ 4.66mg/mL	Cruz et al. (2013)
	<i>Lippia triplinervis</i>	Aerial parts	EO	Carvacrol (31.9%) Thymol (30.6%)	A	AIT	50 mg/mL (98%)	Lage et al. (2013)
	<i>Lippia triplinervis</i>	Aerial parts	EO	Carvacrol (31.9%) Thymol (30.6%)	NHL	LPT	2.5 mg/mL (95.7%)	Lage et al. (2013)
	<i>Lippia gracilis</i>	Leaves	EO	Thymol (59.26%), β-Caryophyllene (8.57%)	NHL	LIT	LC ₅₀ 1.02mg/mL	Costa-Junior et al. (2016)
	<i>Lippia gracilis</i>	Leaves	EO	Carvacrol (35.28%), γ-Terpinene (21.11%)	NHL	LIT	LC ₅₀ 1.03mg/mL	Costa-Junior et al. (2016)
Vitaceae	<i>Cissus quadrangularis</i>	Stems	AE	NA	NHL	LPT	LC ₅₀ 50.00mg/L	Santhoshkumar et al. (2012)
	<i>Cissus quadrangularis</i>	Stems	AE	NA	A	AIT	50.00mg/L (59%)	Santhoshkumar et al. (2012)
	<i>Cissus quadrangularis</i>	Stems	NP-AgNPs	NA	A	AIT	LC ₅₀ 25mg/L (100%)	Santhoshkumar et al. (2012)
	<i>Cissus quadrangularis</i>	Stems	ACE	NA	NHL	LPT	1% (100%)	Wellington et al. (2017)
Zingiberaceae	<i>Curcuma longa</i>	Rhizomes	EO	α-Turmerone (26.8%), ar-turmerone (19.8%)	A	AIT	LC ₅₀ 0.54mg/mL	Chagas et al. (2016)

*Main studies from 2007 to 2017. EO: Essential oil; HE: Hexanic extract; AE: Aqueous extracts; EE: Ethanolic extract; ME: Methanolic extract; OE: Oleoresinous extract; NP-AgNPs: Nanoparticles (Synthesized AgNPs); NP-ZnO: Nanoparticles Synthesized ZnO; DE: Dichloromethane extract; EAE: Ethyl acetate extract; ACE: Acetone extract; A: Adult; NHL: Newly hatched larvae; AIT: Adult immersion test; LPT: Larval packet test; LIT: Larval immersion tests.

Table 3 - Plant extracts with *in vitro* and *in vivo* activity against Blowflies* (Continue).

Family	Plant - Species	Part used	Extract	Insect	Compounds identified	Stage tested	Test	Efficacy	References
Asteraceae	<i>Artemisia monosperma</i>	Aerial parts	EE	<i>Chrysomya albiceps</i>	NAA	TIL	C	0.23mg/cm ² (100%)	Abdel-Shafy et al. (2009)
	<i>Artemisiaherba-alba</i>	Aerial parts	EAE	<i>Chrysomya albiceps</i>	NAA	TIL	C	0.48mg/cm ² (100%)	Abdel-Shafy et al. (2009)
	<i>Lactuca sativa</i>	NAA	EO	<i>Lucilia sericata</i>	NAA	TIL	FA	LC ₅₀ 0.57%	Khater et al. (2011)
	<i>Tithonia diversifolia</i>	Leaves	ME	<i>Chrysomya bezziana</i>	NAA	TIL	C	LC ₅₀ 0,6132%	Wardhana and Diana (2014)
	<i>Tagetes minuta</i>	Aerial parts	EO	<i>Cochliomyia macellaria</i>	Dihydrotagetone (67.64%), Trans-beta-ocimene (16.23%)	TIL	C	LC ₅₀ 0.58µL oil/cm ²	Chaaban et al. (2017b)
	<i>Tagetes minuta</i>	Aerial parts	EO	<i>Lucilia cuprina</i>	Dihydrotagetone (67.64%), Trans-beta-ocimene (16.23%)	TIL	C	LC ₅₀ 0.54µL oil/cm ²	Chaaban et al. (2019a)
	<i>Baccharis dracunculifolia</i>	Aerial parts	EO	<i>Cochliomyia macellaria</i>	β-pinene (9.94%), limonene (9.59%), nerolidol (7.93%)	D-β-TIL	C	LC ₅₀ 2.47µL oil/cm ²	Chaaban et al. (2017c)
Apiaceae	<i>Apium graveolens</i>	NAA	EO	<i>Lucilia sericata</i>	NAA	TIL	C	LC ₅₀ 4.60%	Khater and Khater (2009)
Burseraceae	<i>Commiphora molmol</i>	NAA	EO	<i>Lucilia sericata</i>	NAA	TIL	FA	LC ₅₀ 6.55 mg/ml	Hoda et al. (2016)
	<i>Commiphora molmol</i>	NAA	EE	<i>Lucilia sericata</i>	NAA	TIL	FA	LC ₅₀ 371.15 mg/ml	Hoda et al. (2016)
Campanulaceae	<i>Lobelia leschenaultiana</i>	Leaves	AE	<i>L. sericata</i>	NAA	SIL	C and FA	LC ₅₀ 3.4mg/L	Banumathi et al. (2017)
Cucurbitaceae	<i>Cucurbita maxima</i>	NAA	EO	<i>Cephalopina titillator</i>	NAA	TIL	C	LC ₅₀ 0.20%	Khater (2013)

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

Euphorbiaceae	<i>Euphorbia aegyptiaca</i>	Aerial parts	EAE	<i>Chrysomya albiceps</i>	NAA	TIL	C	0.65mg/cm ² (100%)	Abdel-Shafy et al. (2009)	
	<i>Croton linearifolius</i>	Branches	EE	<i>Cochliomyia macellaria</i>	alcalóides, flavonóides, taninos	esteróides, A	C	60mg/mL (63.75%)	Cunha et al. (2010)	
Fabaceae	<i>Trigonella foenum-graecum</i>	NAA	EO	<i>Lucilia sericata</i>	NAA	TIL	C	LC ₅₀ 2.81%	Khater and Khater (2009)	
Laminaceae	<i>Lavandula angustifolia</i>	NAA	EO	<i>Cephalopina titillator</i>	NAA	TIL	C	50% (100%)	Khater et al. (2013)	
	<i>Lavandula angustifolia</i>	NAA	EO	<i>Lucilia sericata</i>	NAA	TIL	C	32% (100%)	Shalaby et al. (2016)	
Laureaceae	<i>Cinnamomum camphora</i>	NAA	EO	<i>Lucilia sericata</i>	NAA	TIL	C	32% (93.3%)	Shalaby et al. (2016)	
Meliaceae	<i>Azadirachta indica</i>	Leaves	ME	<i>Chrysomya bezziana</i>	NAA	TIL	C	LC ₅₀ 0.4 mg/cm ²	Singh and Kaur (2016)	
Myrtaceae	<i>Melaleuca alternifolia</i>	NAA	EO	<i>Lucilia cuprina</i>	Terpinen-4-ol (43.0%), Terpinene (20.9%)	λ-	TIL	C	50% (50%)	Callander and James (2012)
Piperaceae	<i>Piper betle</i>	Leaves	EO	<i>Chrysomya megacephala</i>	NAA	TIL	C	2% (96.7%)	Kumarasinghe et al. (2002)	
	<i>Piper gaudichaudianum</i>	Leaves	EO	<i>Lucilia cuprina</i>	germacrene B (21.5%), δ-cadinene (9.3%), γ-elemene (6.1%)		TIL	C	LC ₅₀ 2.19μL oil/cm ²	Chaaban et al. (2018)
Poaceae	<i>Cymbopogon citratus</i>	Leaves	EO	<i>Chrysomya putoria</i>	NAA	L1 to FA adult		LC ₅₀ 85.48%	Pinto et al. (2015)	
Zingiberaceae	<i>Curcuma longa</i>	Leaves	EO	<i>Lucilia cuprina</i>	α-phellandrene (41.99%), p-mentha-2,4(8)-diene (24.89%), 1.8-cineole (7.82%)		TIL	C	LC ₅₀ 1.28μL oil/cm ²	Chaaban et al. (2019b)
	<i>Curcuma longa</i>	Leaves	EO	<i>Cochliomyia</i>	α-phellandrene (41.99%), p-		TIL	C	LC ₅₀ 0.82μL oil/cm ²	Chaaban et al. (2019c)

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

macellaria mentha-2,4(8)-diene
(24.89%), 1.8-cineole
(7.82%)

*Main studies from 2009 to 2019. EO: Essential oil; ME: Methanol extract; EE: Ethanol extract; EAE: Ethyl acetate extract; AE: Aqueous extracts; A: Adult; TIL: Third instar larvae; SIL: Second instar larvae; FA: Feeding assays; C: Contact; NAA: Not assessed in article.

Table 4 - Individual compounds of plant extracts with *in vitro* activity against *Haemonchus contortus* and *Rhipicephalus microplus** (Continue).

Individual compound	Parasite	Stage tested	Application	Dose	Mortality (%)	References
Anethole	<i>H. contortus</i>	Eggs	EHI	1,25mg/mL	99.9%	Camurça-Vasconcelos et al. (2007)
Thymol	<i>H. contortus</i>	Eggs	EHI	0,62mg/mL	93.6%	Camurça-Vasconcelos et al. (2007)
1-methyl-4-(1-methylethenyl)-2-(4-furfurylamine) cyclohexanol	<i>R. microplus</i>	Newly hatched larvae	LIT	1.25 mg/mL	100%	Ferrarini et al. (2008)
Pulegone	<i>R. microplus</i>	Newly hatched larvae	LIT	LC ₅₀ 0.321µl/mL	NA	Ribeiro et al. (2010)
Eugenol	<i>R. microplus</i>	Newly hatched larvae	LPT	2.5 µl/mL	99.4%	Monteiro et al. (2011)
Precocene II	<i>R. microplus</i>	Newly hatched larvae	LIT	5 mg/mL	99.33%	Ribeiro et al. (2011)
Carvacrol	<i>H. contortus</i>	Eggs	EHI	2.5mg/mL	93.2%	Zu et al. (2013a)
Carvacrol	<i>H. contortus</i>	Larvae	LDA	5mg/mL	98.0%	Zu et al. (2013a)
Carvacrol	<i>H. contortus</i>	Larvae	LMIA	5mg/mL	96.5%	Zu et al. (2013a)
1,8-Cineole	<i>H. contortus</i>	Eggs	EHI	10mg/mL	74.8%	Zu et al. (2013b)
1,8-Cineole	<i>H. contortus</i>	Larvae	LDA	10mg/mL	65.2%	Zu et al. (2013b)
1,8-Cineole	<i>H. contortus</i>	Larvae	LMIA	10mg/mL	60.3%	Zu et al. (2013b)
Bromelain	<i>H. contortus</i>	Eggs	EHI	1.25mg/mL	85.5%	Domingues et al. (2013)
Bromelain	<i>H. contortus</i>	Larvae	LDA	0.1562mg/mL	99.2%	Domingues et al. (2013)
Carvacrol	<i>R. microplus</i>	Newly hatched larvae	LPT	2.5 µl/mL	100%	Senra et al. (2013)
(E)-cinnamaldehyde	<i>R. microplus</i>	Newly hatched larvae	LPT	2.5 µl/mL	99.2%	Senra et al. (2013)
Thymol	<i>R. microplus</i>	Adult	AIT	LC ₅₀ 5.50mg/mL	NA	Cruz et al. (2013)
Carvacrol	<i>R. microplus</i>	Adult	AIT	LC ₅₀ 4.46mg/mL	NA	Cruz et al. (2013)
Nerolidol	<i>R. microplus</i>	Newly hatched larvae	LPT	30%	96.56%	Valente et al. (2013)
Eugenol	<i>R. microplus</i>	Newly hatched larvae	LPT	0.3%	100%	Valente et al. (2013)
Eugenol	<i>R. microplus</i>	Adult	AIT	30%	100%	Valente et al. (2013)
Elemicin	<i>R. microplus</i>	Newly hatched larvae	LPT	0.25%	100%	Hüe et al. (2015)
Eugenol	<i>R. microplus</i>	Newly hatched larvae	LPT	0.50%	84.68%	Hüe et al. (2015)
Borneol	<i>H. contortus</i>	Eggs	EHI	10mg/mL	92.2%	Qi et al. (2015)
Borneol	<i>H. contortus</i>	Larvae	LDA	10mg/mL	91.2%	Qi et al. (2015)
Nerolidol	<i>R. microplus</i>	Newly hatched larvae	LPT	10.0 mg/mL	97.7%	Lage et al. (2015)
Nerolidol	<i>R. microplus</i>	Adult	AIT	50 mg mL	89.8%	Lage et al. (2015)
Thymol	<i>H. contortus</i>	Eggs	EHI	3.125mg/mL	90.6%	Ferreira et al. (2016)
Thymol	<i>H. contortus</i>	Larvae	LMIA	6.25mg/mL	98.4%	Ferreira et al. (2016)

Marcelo Beltrão Molento, Amanda Chaaban, Erik Nunes Gomes, Vera Maria Carvalho da Silva Santos, Juliana Bello Baron Maurer. Plant extracts used for the control of endo and ectoparasites of livestock: a review of the last 13 years of science. *Archives of Veterinary Science*, v.25, n.4, p. 01-27, 2020.

Thymol	<i>H. contortus</i>	Larvae	LDA	0.25mg/mL	100%	Ferreira et al. (2016)
Spilanthol	<i>R. microplus</i>	Adult	AIT	20.0 mg/mL	92.9%	Cruz et al. (2016)
Spilanthol	<i>R. microplus</i>	Newly hatched larvae	LPT	0.8 mg/mL	91.3%	Cruz et al. (2016)
Thymol	<i>R. microplus</i>	Newly hatched larvae	LIT	LC ₅₀ 1.94mg/mL	NA	Costa-Junior et al. (2016)
Carvacrol	<i>R. microplus</i>	Newly hatched larvae	LIT	LC ₅₀ 2.56mg/mL	NA	Costa-Junior et al. (2016)
Thymol	<i>R. microplus</i>	Newly hatched larvae	LPT	LC ₅₀ 1.53mg/ml	46.65%	Araújo et al. (2016)
Carvacrol	<i>R. microplus</i>	Newly hatched larvae	LPT	LC ₅₀ 1.76mg/mL	37.40%	Araújo et al. (2016)
Eugenol	<i>R. microplus</i>	Newly hatched larvae	LPT	LC ₅₀ 4.67mg/mL	51.10%	Araújo et al. (2016)
Cinnamaldehyde	<i>H. contortus</i>	Eggs	EHI	LC ₅₀ 0.018mg/mL	-	Katiki et al. (2017)
Anethole	<i>H. contortus</i>	Eggs	EHI	LC ₅₀ 0.070mg/LI	-	Katiki et al. (2017)
Carvone	<i>H. contortus</i>	Eggs	EHI	LC ₅₀ 0.085mg/mL	-	Katiki et al. (2017)
Carvacrol	<i>H. contortus</i>	Eggs	EHI	LC ₅₀ 0.11mg/mL	-	Katiki et al. (2017)
Chlorogenic acid	<i>H. contortus</i>	Eggs	EHI	500µg/mL	100%	Jasso-Díaz et al. (2017)
Benzyl benzoate	<i>R. microplus</i>	Adult	AIT	LC ₅₀ 45.73mg/mL	NA	Monteiro et al. (2017)
Benzyl benzoate	<i>R. microplus</i>	Newly hatched larvae	LPT	LC ₅₀ 3.37mg/mL	NA	Monteiro et al. (2017)

*Main studies from 2007 to 2017. LIT: Larval immersion test; AIT: Adult immersion test; LPT: Larval packet test; EHI: Egg hatching inhibition; LMIA: larval migration inhibition assay; LDA: larval development assay.