

Supplementary Data

Phytochemical and antiplasmodial evaluation of five Colombian plants with ethnopharmacological background of antimalarial use

Jorge Enrique Hernández-Carvajal^{1,2}, María Helena Arias-Marciales¹, José Octavio García³, Yoshie Adriana Hata-Urbe¹, Giovanni Garavito-Cárdenas¹, Pilar Ester Luengas-Caicedo^{1*}.

¹ Universidad Nacional de Colombia – Sede Bogotá, Facultad de Ciencias, Departamento de Farmacia, Bogotá D.C., Colombia.

² Universidad Santiago de Cali – Campus Pampalinda, Facultad de Ciencias, Programa de Farmacia, Cali, Colombia.

³ Uitoto representative, Comunidad Ciudad Hitoma, Km 7 Via Leticia - Tarapaca, Leticia, Colombia (RIP).

Corresponding Author: Pilar Ester Luengas-Caicedo. Universidad Nacional de Colombia–Sede Bogotá. Facultad de Ciencias. Departamento de Farmacia. Carrera 30 # 45 - 03, Ciudad Universitaria, Edificio 450, Bogotá D.C., Colombia. E-mail: peluengas@unal.edu.co; 57-601-3165000 Ext. 14640, 14607 Fax: 57-601-3165060.

Table S1. Information corresponding to the location of the collected plants

Plant species name	Location (Coordinates)	Collection place	Collection date	Altitude
<i>Ambelania duckey</i> Mark	N 4°08'2.61'' W 069°55'2.26''	Amazonas: Leticia, Km 7	17-04- 2016	100 masl
<i>Cecropia membranacea</i> Trecul	N 4°04'01'' W 73°31'48''	Meta: Puerto López Villavicencio	24-03- 2014	365 masl
<i>Cecropia metensis</i> Cuatrec	N 4°03'30'' W 73°03'18''	Meta: Puerto López Villavicencio	24-03- 2014	365 masl
<i>Curarea toxicofera</i> (Wedd.) Barneby & Krukoff	S 04°08'2.92'' W 069°55'167''	Amazonas: Leticia, Km 7	17-04- 2016	100 masl
<i>Verbena littoralis</i> Kunth	N 4°19'49''N W 73° 51' 46"	Cundinamarca: Quetame-Vereda Centro	12-10- 2014	1496 masl

Table S2. Amount of extract, solvent, solvent extract ratio, and yield

Plant species name	Ground plant material (g)	Solvent (mL)	Relation Ground plant material-Solvent	Dry extract weight (g)	Yield (%)
<i>Ambelania duckey</i> Mark	150.95	1750	1:12	4.09	2.7
<i>Cecropia membranacea</i> Trécul	452.89	5000	1:11	62.41	13.78
<i>Cecropia metensis</i> Cuatrec	452.89	5000	1:11	44.00	9.73
<i>Curarea toxicofera</i> (Wedd.) Barneby & Krukoff	150.22	1700	1:11	17.5	11.64
<i>Verbena littoralis</i> Kunth	452.93	5700	1:13	78.17	17.26

Table S3. Preliminary phytochemical tests of ethanolic extracts

Classes of secondary metabolite	Mobile phase/tube test	Derivatization reagent for TLC/tube test	Reference compound
Alkaloids	MeOH-CHCl ₃ /NH ₄ OH (95:5:0.1)	Dragendorff for TLC*	Quinine sulphate
Alkaloids	Tube test	Dragendorff Mayer Valser Ammonium Reineckat	Alkaloidal Fraction of "Yage"
Steroids and/or Triterpenoids	C ₆ H ₁₄ /AcOEt (8:2)	Liebermann-Burchard*	β-sitosterol
Naphthoquinones/ Anthraquinone	C ₆ H ₅ CH ₃ / C ₃ H ₆ O /CHCl ₃ (40:15:25).	KOH 10 % in ethanol*	<i>Cassia sp.</i> extract Anthrone
Cardiotonic glycosides	AcOEt /MeOH/H ₂ O (81:11:8)	Vanillin 1% - O-phosphoric acid 10%; 105°C (plate 1) * Kedde (plate 2)*	<i>Digitalis sp.</i> extract Digitoxin
Sesquiterpene lactones	CHCl ₃ /C ₃ H ₆ O (9:1)	Vanillin 1% - O-phosphoric acid 10%; 105°C (plate 1) * Ferric hydroxamate reaction (plate 2)*	Umbelliferone
Coumarins	CHCl ₃ /AcOEt (60:40)	Vanillin 1% - O-phosphoric acid 10%* Ferric hydroxamate reaction* UV light (365 and 254 nm)*	Umbelliferone Coumarin
Polyphenols	AcOEt/ HCO ₂ H /AcOH/H ₂ O (100:11:11:27)	C ₆ N ₆ FeK ₃ 1% - FeCl ₃ 2% (1: 1)*	Tannic acid
Phenolic acids	AcOEt/AcOH/HCO ₂ H /H ₂ O (100:11:11:27)	NP-PEG; UV365 mn*	Chlorogenic acid
Flavonoid Glycosides	AcOEt/AcOH/HCO ₂ H /H ₂ O (100:11:11:27)	NP-PEG; UV365 mn *	Rutin
Flavonoid Aglycones	C ₆ H ₅ CH ₃ /C ₃ H ₆ O/CHCl ₃	NP-PEG; UV365 mn *	Quercetin

(40:15:25)			
Phenolic compounds	Test tube	FeCl ₃ 10%	Rutin
Flavonoids	Test tube	Shinoda, HCl, and heating	Rutin
Tannins	Test tube	Gelatin-salt / urea 10M/ FeCl ₃ 10%	NA
Proanthocyanidins	Test tube	BuOH/HCl (95:5)	NA
Saponins	Test tube	Foam test-agitation	NA
		Hemolysis	Digitonin

NA: not available. *Test performed by TLC.

MeOH: methanol; CHCl₃: chloroform; C₆H₁₄: hexane; NH₄OH: ammonium hydroxide;
 C₆H₅CH₃: toluene; C₃H₆O: acetone; AcOEt: ethyl acetate; AcOH: glacial acetic acid;
 HCO₂H: formic acid; BuOH: n-Butanol; H₂O: water; NP: natural products reagent; PEG:
 polyethylene glycol 4000; EP: petroleum ether; HCl: concentrated hydrochloric acid;
 C₆N₆FeK₃: potassium ferricyanide; FeCl₃: ferric chloride.