

# Holistic Photoprotection, Broad Spectrum (UVA-UVB), and Biological Effective Protection Factors (BEPFs) from *Baccharis antioquiensis* Hydrolysates Polyphenols

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## Supplementary Materials (SM)

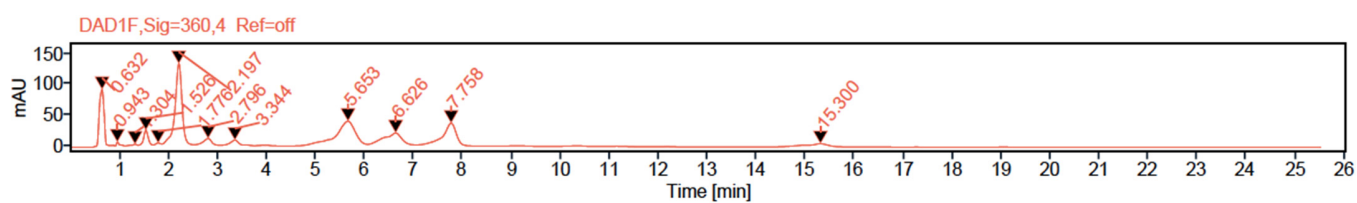
**Figure S1. Extractions assay 1**



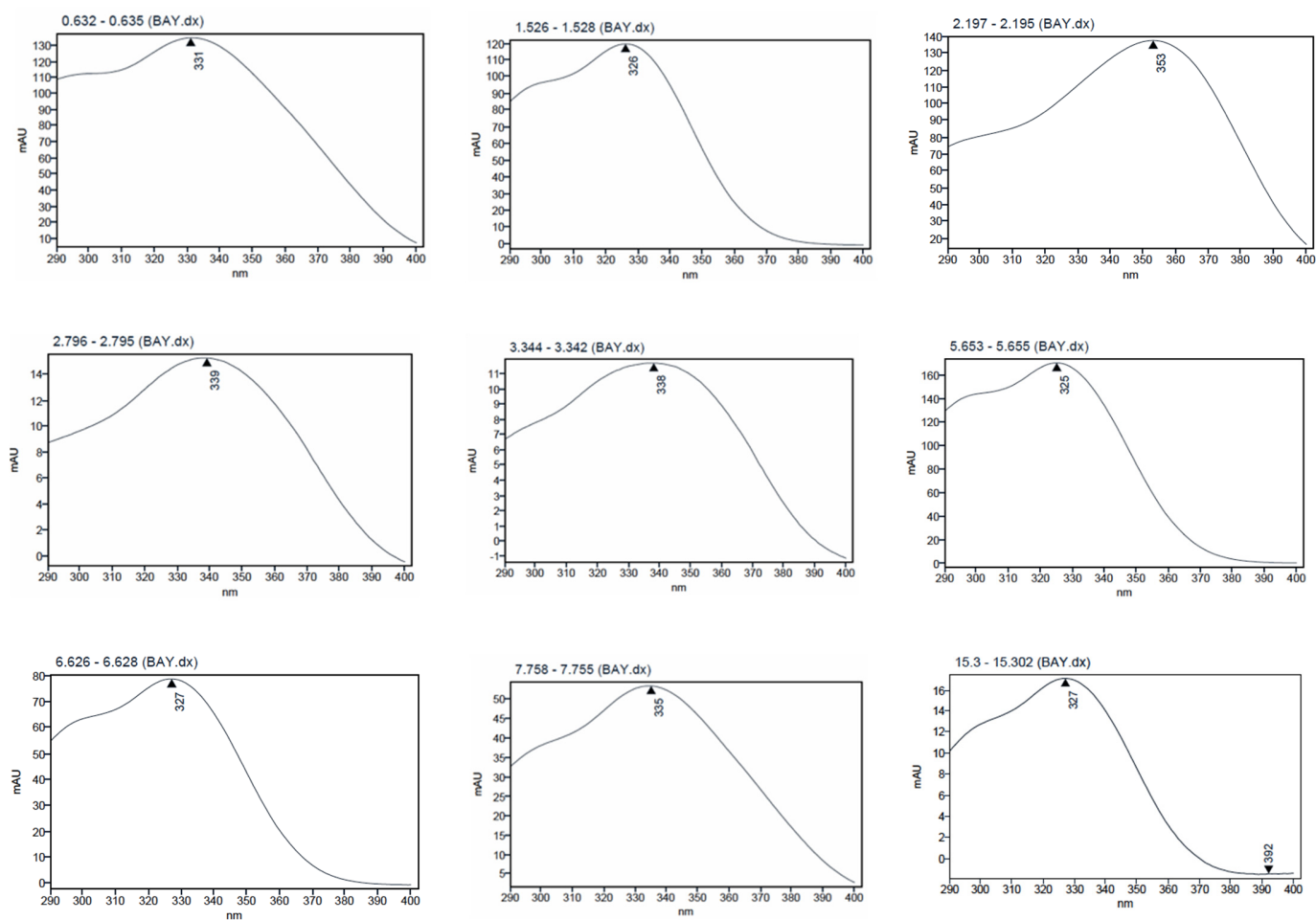
**Figure S2. Dry methanolic extract (DME) assay 3**



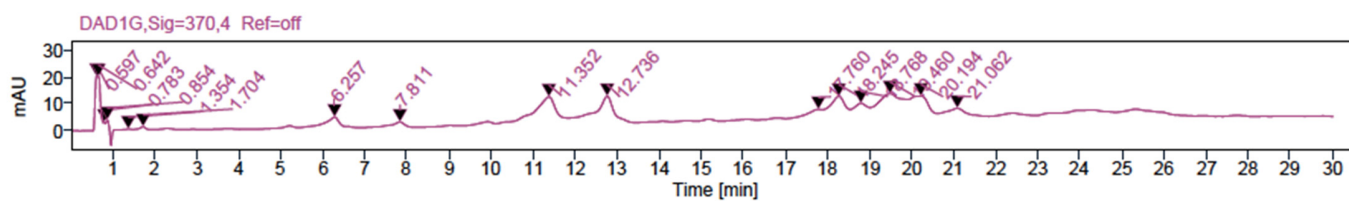
**Figure S3. Chromatographic profile of DME**



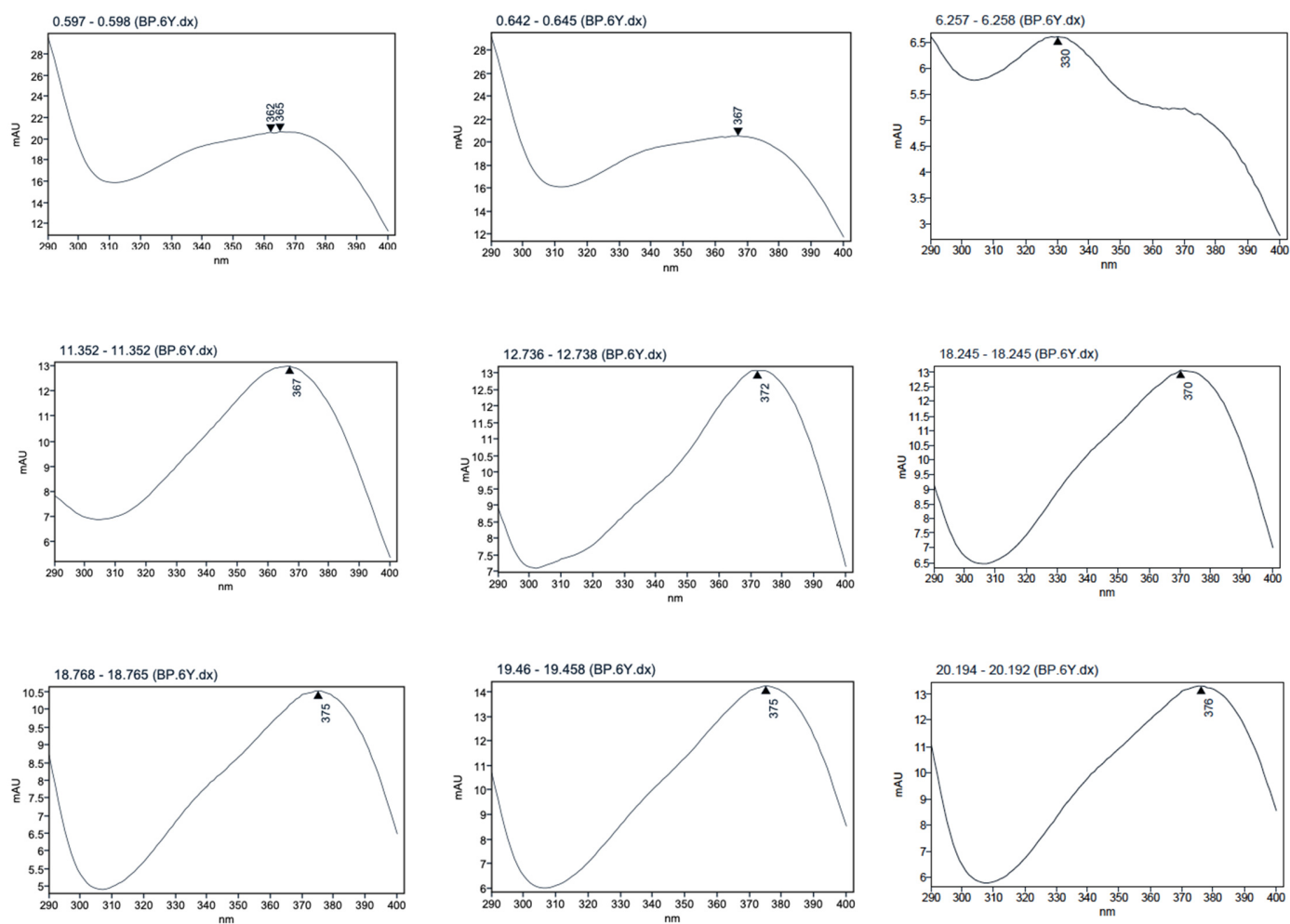
**Figure S4. UV spectrum of main DME components**



**Figure S5. Chromatographic profile of PME**

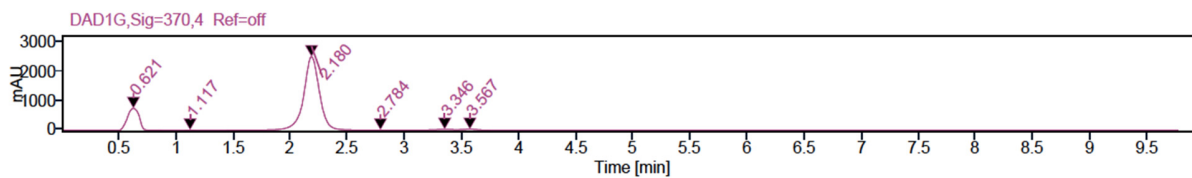


**Figure S6. UV spectrum of main PME components**

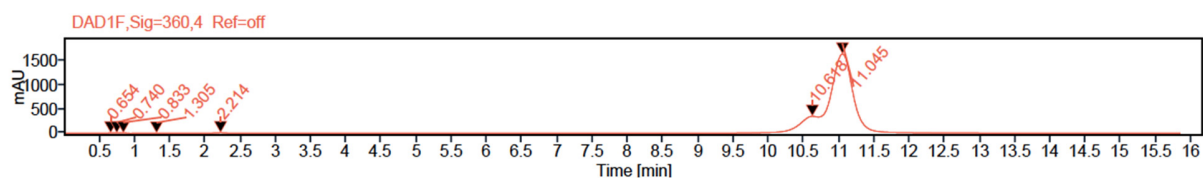


**Figure S7. Chromatograms and UV Spectra of Rutin and Quercetin**

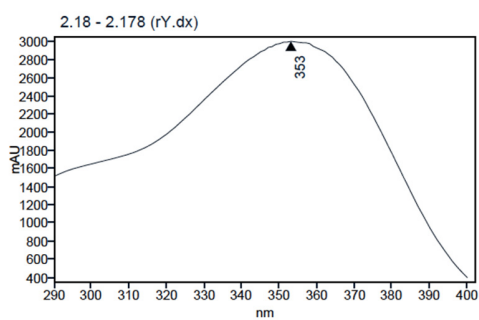
Rutin



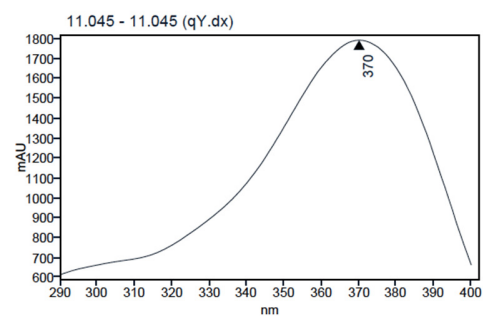
Quercetin



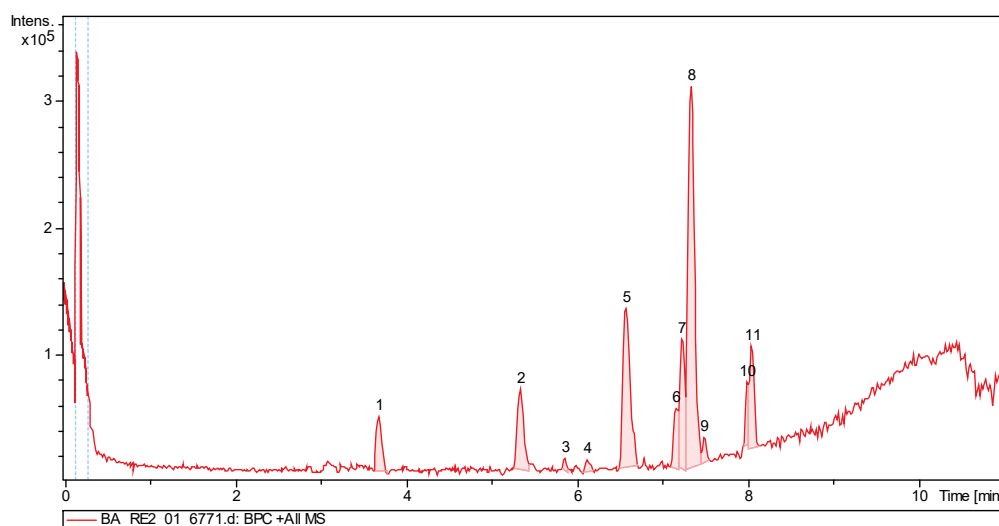
Rutin



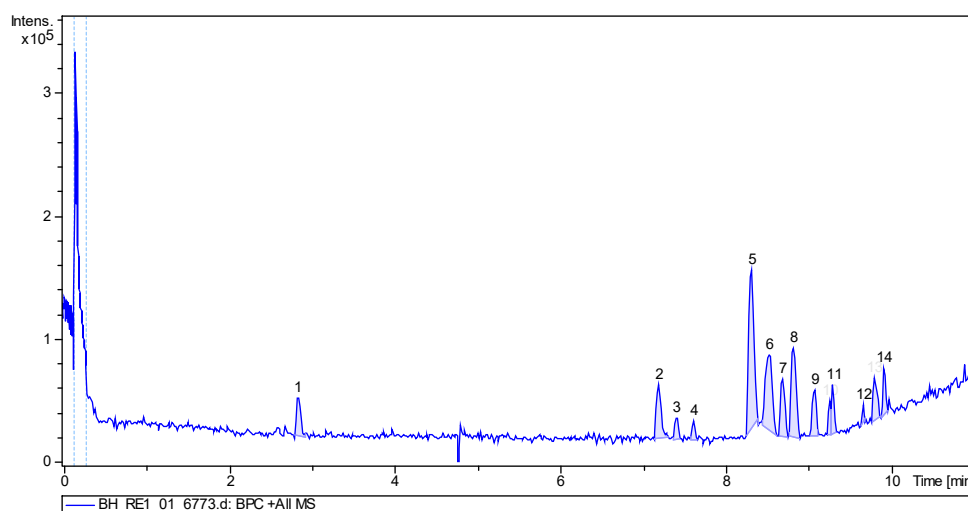
Quercetin



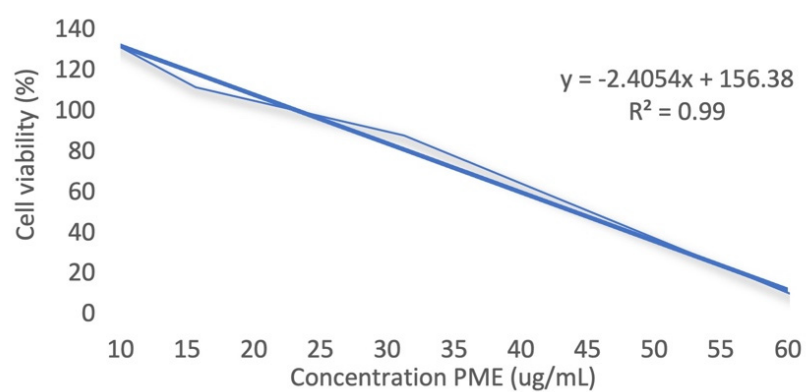
**Figure S8. ESI-MS/MS chromatogram for DME.**



**Figure S9. ESI-MS/MS chromatogram for PME.**



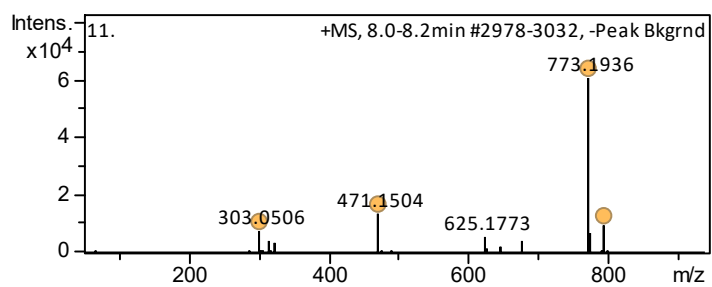
**Figure S10. Cell viability of HaCaT exposed to PME.**



**Table S1. Spectral characteristics of the compounds identified in DME.**

Peak	RT	Spectrum	ID
2	5.4	<p>+MS, 5.3-5.5min #1965-2033, -Peak Bkgrnd</p>	3-O-caffeoylquinic acid (chlorogenic acid)
5	6.6	<p>+MS, 6.5-6.7min #2418-2501, -Peak Bkgrnd</p>	Caffeoylquinic acid hexose
7	7.2	<p>+MS, 7.2-7.3min #2677-2707, -Peak Bkgrnd</p>	Caffeoylquinic acid hexose
8	7.3	<p>+MS, 7.3-7.5min #2707-2774, -Peak Bkgrnd</p>	Quercetin 3-O-rhamnopyranosyl-(1→6)-glucopyranose (rutin)
10	8.0	<p>+MS, 8.0-8.0min #2960-2978, -Peak Bkgrnd</p>	Kaempferol 3-O-rhamnopyranosyl-(1→6)-glucopyranose

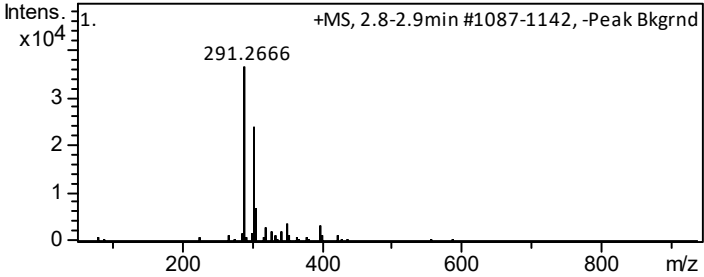
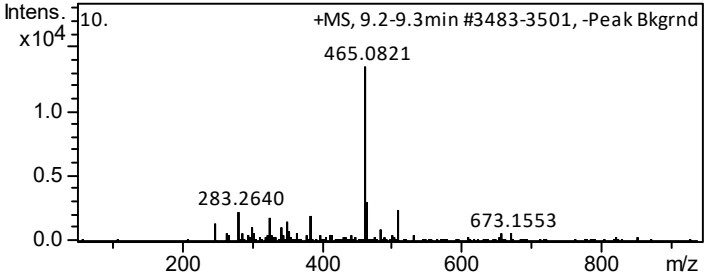
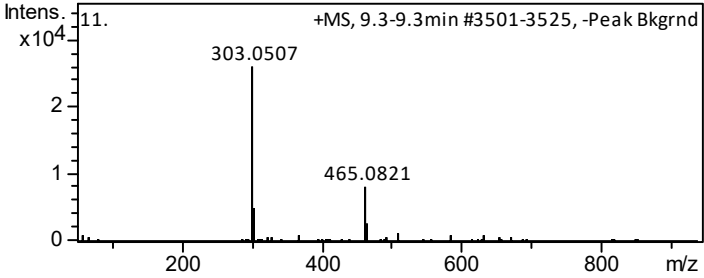
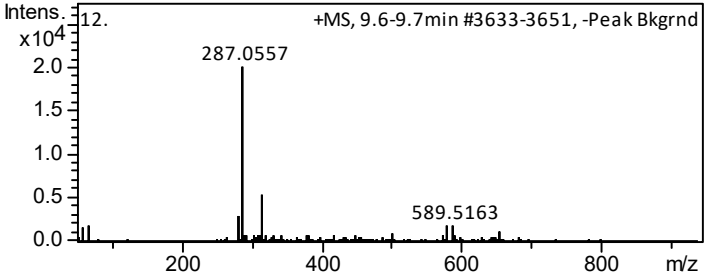
11 8.0



Quercetin-3-O-  
(4'''-O-caffeoyl)-  
rhamnopyranosyl-  
(1→6)-  
galactopyranose



**Table S2. Spectral characteristics of the compounds identified in PME.**

Peak	RT	Spectrum	ID
1	2.8		epicatechin/catechin
10	9.3		Quercetin-3-glucoside
11	9.3		Quercetin-3-glucoside
12	9.7		Kaempferol

**Table S3. Composition of the sunscreen emulsion.**

Function	Compound	Percentage in phase	Percent in emulsion
<b>Phase A</b>			
<b>Surfactant emulsifying</b>	<b>Olivem 1000:</b> Cetearyl Olivatate (and) Sorbitan Olivatate	16.0	4.0
	<b>Protelan:</b> Glyceryl Stearate (and) Cetearyl Alcohol (and) Stearic Acid (and) Sodium Lauroyl Glutamate	16.0	4.0
<b>Emulsion stabilizing</b>	Stearic Acid	4.0	1.0
<b>Skin conditioning</b>	Sesamum Indicum Seed Oil	12.0	3.0
	Vitis vinifera seed oil	8.0	2.0
	Caprylic/Capric glycerides	12.0	3.0
	Mangifera Indica Seed Butte	8.0	2.0
	Isopropyl myristate	8.0	2.0
	Cetyl alcohol	4.0	1.0
	Cetyl palmitate	8.0	2.0
<b>Antioxidant</b>	Tocopherol	4.0	1.0
<b>Total in phase A</b>		100.0	25.0
<b>Phase B</b>			
	Water	94.9	56.2
<b>Humectant</b>	Sorbitol 60 %	5.1	3.0
<b>Total in phase B</b>		100.0	59.2
<b>Phase C</b>			
<b>Active</b>	Extract	66.7	10.0
<b>Solvent</b>	Propylene glycol	33.3	5.0
<b>Total in phase C</b>		100.0	15.0
<b>Phase D</b>			
<b>Preservative</b>	<b>Geogard 221:</b> Dehydroacetic Acid (and) Benzyl Alcohol	100.0	0.8
<b>Total in phase D</b>		100.0	0.8
<b>TOTAL</b>			<b>100.0</b>