

Supporting Information

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Determination of antioxidant, anticholinesterase, tyrosinase inhibitory activities and fatty acid profiles of 10 Anatolian *Klasea* Cass. Species

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<i>Klasea</i> species	Extract	β -carotene-linoleic acid assay				DPPH assay			
		100 μ g/mL	200 μ g/mL	400 μ g/mL	800 μ g/mL	100 μ g/mL	200 μ g/mL	400 μ g/mL	800 μ g/mL
<i>K. bornmuelleri</i>	Hexane	49.7 $\pm$ 1.3	74.6 $\pm$ 0.9	76.8 $\pm$ 2.2	88.3 $\pm$ 0.7	-	-	-	-
	Methanol	17.0 $\pm$ 3.1	25.7 $\pm$ 1.9	34.7 $\pm$ 0.2	51.6 $\pm$ 2.1	38.6 $\pm$ 1.3	60.0 $\pm$ 0.1	84.4 $\pm$ 0.9	86.1 $\pm$ 0.2
<i>K. cerinthifolia</i>	Hexane	30.0 $\pm$ 1.4	58.4 $\pm$ 2.1	74.6 $\pm$ 1.2	79.7 $\pm$ 0.5	17.7 $\pm$ 1.5	17.8 $\pm$ 1.6	18.2 $\pm$ 0.0	27.0 $\pm$ 1.4
	Methanol	82.9 $\pm$ 1.1	83.9 $\pm$ 1.3	87.4 $\pm$ 3.6	88.8 $\pm$ 2.2	61.1 $\pm$ 1.1	83.3 $\pm$ 0.8	85.3 $\pm$ 0.1	86.3 $\pm$ 0.3
<i>K. coriaceae</i>	Hexane	35.0 $\pm$ 5.6	44.4 $\pm$ 1.8	78.9 $\pm$ 4.2	91.6 $\pm$ 0.6	-	-	-	1.7 $\pm$ 1.9
	Methanol	66.5 $\pm$ 1.6	78.5 $\pm$ 0.2	80.3 $\pm$ 0.0	82.9 $\pm$ 1.9	62.4 $\pm$ 0.9	81.8 $\pm$ 0.2	84.6 $\pm$ 0.1	85.1 $\pm$ 0.2
<i>K. grandifolia</i>	Hexane	27.4 $\pm$ 1.1	40.7 $\pm$ 0.4	56.2 $\pm$ 2.8	61.9 $\pm$ 3.9	15.4 $\pm$ 1.0	16.8 $\pm$ 1.2	19.7 $\pm$ 0.6	24.8 $\pm$ 0.7
	Methanol	77.6 $\pm$ 2.1	85.2 $\pm$ 0.3	89.4 $\pm$ 0.1	92.9 $\pm$ 0.9	27.0 $\pm$ 1.5	47.2 $\pm$ 0.8	70.5 $\pm$ 1.8	80.2 $\pm$ 1.9
<i>K. haussknechtii</i>	Hexane	70.1 $\pm$ 4.2	86.5 $\pm$ 0.6	87.7 $\pm$ 0.1	89.0 $\pm$ 0.3	34.2 $\pm$ 0.2	40.7 $\pm$ 0.7	62.2 $\pm$ 4.4	66.3 $\pm$ 2.4
	Methanol	77.9 $\pm$ 0.6	81.1 $\pm$ 1.6	83.5 $\pm$ 0.1	88.5 $\pm$ 0.4	28.2 $\pm$ 0.5	30.7 $\pm$ 0.3	33.1 $\pm$ 0.6	39.6 $\pm$ 1.2
<i>K. kotschyi</i>	Hexane	59.9 $\pm$ 5.3	74.7 $\pm$ 3.2	82.8 $\pm$ 2.4	84.0 $\pm$ 2.1	13.9 $\pm$ 1.7	14.5 $\pm$ 1.0	18.7 $\pm$ 1.1	22.4 $\pm$ 1.0
	Methanol	18.6 $\pm$ 0.9	24.6 $\pm$ 0.9	36.1 $\pm$ 1.4	64.8 $\pm$ 0.2	31.7 $\pm$ 1.1	54.5 $\pm$ 0.6	81.1 $\pm$ 0.4	82.1 $\pm$ 0.2
<i>K. kurdica</i>	Hexane	66.4 $\pm$ 0.6	80.9 $\pm$ 3.1	82.4 $\pm$ 4.3	95.6 $\pm$ 0.9	16.6 $\pm$ 1.6	16.8 $\pm$ 1.1	24.4 $\pm$ 0.1	32.2 $\pm$ 1.7
	Methanol	51.9 $\pm$ 4.1	69.6 $\pm$ 2.0	76.9 $\pm$ 1.8	79.8 $\pm$ 0.4	82.1 $\pm$ 0.2	85.7 $\pm$ 0.3	86.6 $\pm$ 0.54	88.5 $\pm$ 0.8
<i>K. oligocephala</i>	Hexane	32.9 $\pm$ 1.6	39.5 $\pm$ 3.3	60.5 $\pm$ 0.3	86.1 $\pm$ 0.9	-	1.1 $\pm$ 1.8	7.1 $\pm$ 0.7	19.9 $\pm$ 0.8
	Methanol	73.2 $\pm$ 1.6	84.6 $\pm$ 7.7	85.3 $\pm$ 3.8	86.1 $\pm$ 1.9	51.6 $\pm$ 1.5	76.6 $\pm$ 0.5	86.0 $\pm$ 0.1	88.3 $\pm$ 0.6
<i>K. quinquefolia</i>	Hexane	72.2 $\pm$ 1.8	83.4 $\pm$ 1.1	86.7 $\pm$ 1.5	88.4 $\pm$ 1.9	16.8 $\pm$ 1.2	14.9 $\pm$ 1.5	17.4 $\pm$ 0.9	19.8 $\pm$ 0.1
	Methanol	23.2 $\pm$ 0.6	50.0 $\pm$ 0.8	61.0 $\pm$ 1.8	76.1 $\pm$ 0.3	38.9 $\pm$ 1.5	77.3 $\pm$ 0.9	79.7 $\pm$ 0.5	81.9 $\pm$ 0.4
<i>K. serratuloides</i>	Hexane	40.8 $\pm$ 1.9	59.1 $\pm$ 5.6	82.2 $\pm$ 1.4	90.6 $\pm$ 0.5	-	-	-	-
	Methanol	17.4 $\pm$ 0.7	44.6 $\pm$ 3.4	71.3 $\pm$ 1.7	82.9 $\pm$ 3.1	35.5 $\pm$ 1.1	63.9 $\pm$ 0.4	82.6 $\pm$ 0.2	85.6 $\pm$ 0.4
BHA ^b		90.6 $\pm$ 0.1	91.8 $\pm$ 0.2	92.8 $\pm$ 0.0	93.7 $\pm$ 0.0	59.0 $\pm$ 0.0	79.3 $\pm$ 0.5	90.8 $\pm$ 0.2	94.1 $\pm$ 0.1
α -Tocopherol ^b		87.8 $\pm$ 0.4	90.1 $\pm$ 0.1	91.6 $\pm$ 0.3	93.1 $\pm$ 0.5	84.1 $\pm$ 0.0	95.9 $\pm$ 0.0	96.1 $\pm$ 0.9	96.7 $\pm$ 0.1

^a Values expressed are means $\pm$ S.E.M. of three parallel measurements. ($p<0.05$)

^b Reference compounds.

Table S1: The inhibition (%) of linoleic acid oxidation by β -carotene/linoleic acid assay and the (%) free radical scavenging activity by DPPH assay of extracts of *Klasea* species ^a.

<i>Klasea</i> species	Extract	Absorbance CUPRAC Assay				Inhibition % Metal Chelating Activity			
		100 µg/mL	200 µg/mL	400 µg/mL	800 µg/mL	100 µg/mL	200 µg/mL	400 µg/mL	800 µg/mL
<i>K. bornmuelleri</i>	Hexane	0.3±0.0	0.4±0.0	0.7±0.0	1.0±0.0	25.9±1.1	47.1±0.1	60.9±0.3	64.1±3.9
	Methanol	1.1±0.0	1.8±0.1	2.5±0.1	2.9±0.1	1.8±0.5	8.1±7.2	14.8±0.3	53.0±6.2
<i>K. cerinthifolia</i>	Hexane	0.2±0.0	0.3±0.0	0.4±0.0	0.8±0.0	-	-	9.4±1.4	59.4±5.3
	Methanol	0.5±0.0	1.0±0.0	1.8±0.1	2.7±0.2	-	26.3±0.2	30.7±0.8	40.1±0.9
<i>K. coriaceae</i>	Hexane	0.2±0.0	0.3±0.0	0.4±0.0	0.8±0.0	-	28.3±3.2	41.5±1.2	42.0±0.3
	Methanol	0.8±0.0	1.5±0.1	2.2±0.1	2.9±0.1	1.9±0.1	2.4±0.6	4.1±0.0	4.3±0.7
<i>K. grandifolia</i>	Hexane	0.2±0.0	0.3±0.0	0.5±0.0	0.9±0.0	35.3±0.22	54.8±1.4	67.9±1.7	69.7±0.7
	Methanol	0.6±0.0	1.1±0.0	1.9±0.1	2.5±0.0	-	29.4±0.9	36.2±1.6	42.0±0.6
<i>K. haussknechtii</i>	Hexane	0.4±0.0	0.7±0.1	1.4±0.2	2.3±0.2	-	0.6±0.2	27.3±1.9	37.9±1.1
	Methanol	0.2±0.0	0.3±0.0	0.5±0.0	0.9±0.0	32.6±0.7	45.5±0.2	55.2±0.3	57.3±3.8
<i>K. kotschy</i>	Hexane	0.4±0.0	0.6±0.0	0.9±0.1	1.3±0.1	22.8±0.2	33.9±1.1	38.2±1.1	46.6±1.2
	Methanol	1.1±0.1	1.8±0.0	2.4±0.2	3.1±0.0	-	5.5±0.1	9.9±0.7	12.5±1.4
<i>K. kurdica</i>	Hexane	0.2±0.0	0.4±0.0	0.6±0.0	0.9±0.0	34.7±3.9	36.2±3.5	54.2±0.6	64.8±3.6
	Methanol	0.9±0.0	1.6±0.1	2.7±0.1	3.5±0.0	22.6±0.5	25.5±0.9	27.7±1.6	31.9±0.9
<i>K. oligocephala</i>	Hexane	0.2±0.0	0.4±0.0	0.6±0.0	0.9±0.0	39.6±1.1	49.5±1.2	70.9±0.5	74.9±0.7
	Methanol	0.5±0.0	1.0±0.0	1.8±0.1	2.9±0.0	-	9.6±1.3	12.7±5.2	16.1±3.7
<i>K. quinquefolia</i>	Hexane	0.2±0.0	0.4±0.0	0.6±0.0	1.0±0.0	44.1±0.7	56.4±1.3	58.1±2.7	69.7±1.9
	Methanol	0.8±0.0	1.6±0.0	2.2±0.1	3.1±0.1	6.2±5.0	8.7±0.9	18.6±1.2	26.0±1.7
<i>K. serratuloides</i>	Hexane	0.2±0.0	0.3±0.0	0.5±0.0	0.7±0.0	43.1±0.2	33.9±0.3	60.2±1.1	63.2±0.9
	Methanol	0.9±0.1	1.4±0.1	2.1±0.1	2.8±0.1	-	22.8±0.5	27.4±0.6	27.6±1.4
BHA ^b		0.1±0.0	3.5±0.0	3.7±0.0	3.8±0.0	NT	NT	NT	NT
α-Tocopherol ^b		0.1±0.0	1.9±0.1	2.2±0.1	2.9±0.0	NT	NT	NT	NT
EDTA ^b		NT	NT	NT	NT	92.5±1.4	94.7±0.6	95.2±0.1	96.3±0.1

^a Values expressed are means ± S.E.M. of three parallel measurements. ($p < 0.05$)

^b Reference compounds. NT: not tested

Table S2: The inhibition (%) of the cupric reducing antioxidant capacity (CUPRAC) by Cu^{2+} – Cu^{+} transformation and metal chelating activity by Ferrene– Fe^{2+} assays of the extracts of *Klasea* species ^a.

		Cholinesterase Inhibitory Activity						Tyrosinase Inhibitory Activity		
		AChE Assay			BChE Assay			Tyrosinase Assay		
<i>Klasea</i> species	Extract	50 µg/mL	100 µg/mL	200 µg/mL	50 µg/mL	100 µg/mL	200 µg/mL	50 µg/mL	100 µg/mL	200 µg/mL
<i>K. bornmuelleri</i>	Hexane	10.7±4.1	12.9±0.3	33.3±2.3	5.9±0.0	16.1±3.9	23.7±0.8	-	-	-
	Methanol	13.4±2.2	16.5±2.0	19.9±2.5	-	19.3±1.7	25.3±0.9	30.1±2.5	36.7±3.7	42.6±4.6
<i>K. cerinthifolia</i>	Hexane	8.7±0.3	33.7±5.7	51.2±0.5	11.2±0.3	15.6±0.9	16.9±0.7	10.7±3.6	20.3±1.8	31.9±1.3
	Methanol	21.1±0.3	23.2±1.9	24.9±0.0	5.2±2.7	26.2±0.3	35.2±1.7	-	-	-
<i>K. coriaceae</i>	Hexane	6.0±0.1	6.1±0.5	14.8±2.3	8.2±2.1	9.4±7.6	12.9±9.5	28.9±0.0	45.8±3.8	48.2±4.1
	Methanol	10.8±0.9	18.7±1.6	19.5±2.0	14.3±4.9	17.5±8.8	26.1±2.3	20.9±1.3	26.7±1.8	29.4±0.7
<i>K. grandifolia</i>	Hexane	33.2±0.1	34.5±1.8	37.5±1.7	7.6±0.8	13.3±5.5	15.7±4.0	15.4±5.3	16.9±1.8	19.6±2.4
	Methanol	21.6±0.7	22.7±0.1	27.5±0.7	6.3±0.2	13.9±1.6	26.6±0.1	-	-	-
<i>K. haussknechtii</i>	Hexane	-	-	-	12.8±2.6	29.9±0.1	46.7±0.2	13.9±1.3	14.6±3.2	20.7±3.1
	Methanol	20.5±1.3	22.9±1.3	25.4±0.3	14.2±1.3	19.9±0.9	27.2±2.5	-	-	-
<i>K. kotschyii</i>	Hexane	3.2±1.1	5.4±0.8	14.9±0.7	-	22.2±0.1	27.4±0.7	-	-	-
	Methanol	13.7±4.8	19.9±2.6	35.7±1	12.9±1.9	29.8±0.9	42.9±0.3	7.2±4.3	9.8±3.3	22.6±3.5
<i>K. kurdica</i>	Hexane	-	-	0.2±2.5	24.2±1.2	27.1±1.3	29.4±4.1	-	-	4.9±1.4
	Methanol	3.9±5.1	20.7±0.6	14.6±1.7	4.5±0.4	18.2±1.1	32.6±1.2	15.4±2.3	33.4±0.0	41.8±3.9
<i>K. oligocephala</i>	Hexane	15.7±5.6	21.5±0.9	23.5±1.7	11.2±1.6	14.8±4.3	18.8±0.9	-	-	-
	Methanol	2.5±0.6	10.5±0.3	27.0±0.9	12.3±0.5	22.6±0.8	35.6±1.5	-	-	-
<i>K. quinquefolia</i>	Hexane	11.5±7.3	14.3±8.7	16.8±9.6	0.2±4.3	10.1±0.4	19.8±0.4	-	-	0.3±1.4
	Methanol	11.1±1.1	15.3±0.9	18.8±0.8	8.4±2.2	19.8±1.2	27.3±0.5	28.8±3.9	35.1±2.6	37.6±0.2
<i>K. serratuloides</i>	Hexane	40.6±1.1	45.9±0.5	57.6±7.2	7.6±0.7	13.1±0.2	19.4±1.2	-	-	21.4±1.4
	Methanol	-	-	2.9±0.9	9.9±0.1	20.1±0.9	22.5±0.1	31.1±1.1	34.2±3.5	44.4±3.3
Galantamine ^b		74.4±0.7	78.6±0.5	81.4±1.0	48.7±0.9	65.0±0.4	75.5±1.1	NT	NT	NT
Kojic acid ^b		NT	NT	NT	NT	NT	NT	57.1±3.2	79.8±0.6	83.6±0.2

^a Values expressed are means ± S.E.M. of three parallel measurements. ($p < 0.05$)

^b Reference compounds. NT: not tested.

Table S3: Cholinesterase and tyrosinase inhibitory activities of the extracts of *Klasea* species ^a.