Ethyl acetate extract of the *Musa nana* flower inhibits osteoclastogenesis and suppresses NF-κB and MAPK pathways

--Supplementary Materials--

Min-Min Tang†[a,b,c,d], Ying-Jie Chen†[b], Jia-Ying Wu[b], Aftab Amin[b], Xue-Ming Zhou[a,d], Jin Cai[a,d], Guang-Ying Chen[a,d*], Zhi-Ling Yu[b*]

[a]Key Laboratory of Tropical Medicinal Resource Chemistry of Ministry of Education, College of Chemistry and Chemical Engineering, Hainan Normal University, Haikou, 571158, China

[b]Centre for Cancer and Inflammation Research, School of Chinese Medicine, Hong Kong Baptist University, Hong Kong, 999077, China

[c]Coconut Research Institute of Chinese Academy of Tropical Agricultural Sciences, Wenchang, Hainan, 571339, China

[d]Key Laboratory of Tropical Medicinal Plant Chemistry of Hainan Province, College of Chemistry and Chemical Engineering, Hainan Normal University, Haikou, 571158, China

†Authors contributed equally to this study.

[*]Corresponding authors at: Key Laboratory of Tropical Medicinal Resource Chemistry of Ministry of Education, College of Chemistry and Chemical Engineering, Hainan Normal University, Haikou, 571158, China (GY. Chen); School of Chinese Medicine, Hong Kong Baptist University, Hong Kong, 999077, China (ZL. Yu).

E-mail addresses: chgying123@163.com (GY. Chen), zlyu@hkbu.edu.hk (ZL. Yu).

Table S1. Reference standards used in UPLC-MS/MS analyses

No.	Compound	CAS No.	No.	Compound	CAS No.	No.	Compound	CAS No.	No.	Compound	CAS No.
1	Protocatechuic acid	99-50-3	**25**	Luteolin	491-70-3	**49**	Icariin	489-32-7	**73**	Glycitin	40246-10-4
2	Protocatechualdehyde	139-85-5	**26**	(-)-Epicatechin gallate	1257-08-5	**50**	Isoliquiritigenin	961-29-5	**74**	Genistin	446-72-0
3	Apigenin-7-glucoside	578-74-5	**27**	Acacetin	480-44-4	**51**	Isosakuranetin	480-43-3	**75**	Vitexin rhamnoside	64820-99-1
4	(-)-Gallocatechin gallate	4233-96-9	**28**	Amentoflavone	1617-53-4	**52**	Kaempferide	491-54-3	**76**	Biochanin A	491-80-5
5	Pyrocatechol	120-80-9	**29**	Apigenin	520-36-5	**53**	Kaempferitrin	482-38-2	**77**	Isorhamnetin-3-O-nehesperidine	55033-90-4
6	Rutin	153-18-4	**30**	Astilbin	29838-67-3	**54**	Liquiritin	551-15-5	**78**	Baicalin	21967-41-9
7	Hyperoside	482-36-0	**31**	Avicularin	572-30-5	**55**	Myricitrin	17912-87-7	**79**	Silibinin	22888-70-6
8	Isoquercitrin	482-35-9	**32**	Baicalein	491-67-8	**56**	Narirutin	14259-46-2	**80**	Farrerol	24211-30-1
9	Kaempferol-3-O-rutinoside	17650-84-9	**33**	Chrysin	480-40-0	**57**	Neohesperidin	13241-33-3	**81**	Apiin	26544-34-3
10	Cynaroside	5373-11-5	**34**	Cianidanol	18829-70-4	**58**	Nobiletin	478-01-3	**82**	Puerarin	3681-99-0
11	Quercetin	522-12-3	**35**	Daidzin	552-66-9	**59**	Orientin	28608-75-5	**83**	Sciadopitysin	521-34-6
12	Kaempferol	520-18-3	**36**	Diosmin	520-27-4	**60**	Phloretin	60-82-2	**84**	Cyanidin	13306-05-3
13	Ononin	486-62-4	**37**	Engeletin	572-31-6	**61**	Pinocembrin	480-39-7	**85**	Cyanidin-3-O-glucoside	4233-96-9
14	Myricetin	529-44-2	**38**	Eriocitrin	13463-28-0	**62**	Quercitrin	117-39-5	**86**	Gallocatechin	970-73-0
15	Diosmetin	520-34-3	**39**	Eriodictyol	552-58-9	**63**	Rhoifolin	17306-46-6	**87**	*L*-Epicatechin	490-46-0
16	Taxifolin	480-18-2	**40**	Galangin	548-83-4	**64**	Schaftoside	51938-32-0	**88**	Procyanidin B1	20315-25-7
17	Dihydromyricetin	27200-12-0	**41**	Genistein	529-59-9	**65**	sinensetin	28608-75-5	**89**	Procyanidin B2	29106-49-8
18	Isorhamnetin	480-19-3	**42**	Genkwanin	437-64-9	**66**	Tectochrysin	520-28-5	**90**	(-)-Epigallocatechin gallate	989-51-5
19	Chalconearingenin	25515-46-2	**43**	Glabridin	59870-68-7	**67**	Tiliroside	20316-62-5	**91**	(-)-Epigallocatechin	970-74-1
20	Naringenin	480-41-1	**44**	Glycitein	40957-83-3	**68**	Troxerutin	7085-55-4	**92**	Cyanidin Chloride	528-58-5
21	Astragalin	480-10-4	**45**	Hesperetin	520-33-2	**69**	Vitexin	3681-93-4	**93**	Cyanidin-3-O-glucoside chloride	7084-24-4
22	Narcissoside	59870-68-7	**46**	Hesperidin	520-26-3	**70**	Tangeretin	481-53-8			
23	Tectorigenin	548-77-6	**47**	Homoorientin	4261-42-1	**71**	Fisetin	528-48-3			
24	Spinosin	72063-39-9	**48**	Hydroxygenkwanin	20243-59-8	**72**	Poncirin	14941-08-3			

Table S2. Primers used for RT-qPCR

Gene	Primer sequence, 5'-3'	
	Forward	**Reverse**
TRAP	GCCAAGATGGATTCATGGGTGG	CAGAGACATGATGAAGTCAGCG
CTSK	GGCCAACTCAAGAAGAAAACTG	TCTCTGTACCCTCTGCATTTAGC
MMP-9	CTTCTTCTCTGGACGTCAAATG	CATTTTGGAAACTCACACGCC
OSCAR	CTGCTGGTAACGGATCAGCTCCCCAGA	CCAAGGAGCCAGAACCTTCGAAACT
TRAF6	ATTTCATTGTCAACTGGGCA	TAAGTGTCCCATCTGCTTGA
RANK	CGAGGAAGATTCCCACAGAG	CAGTGAAGTCACAGCCCTCA
ACTB	AGAGGGAAATCGTGCGTGAC	CAATAGTGACCTGGCCGT

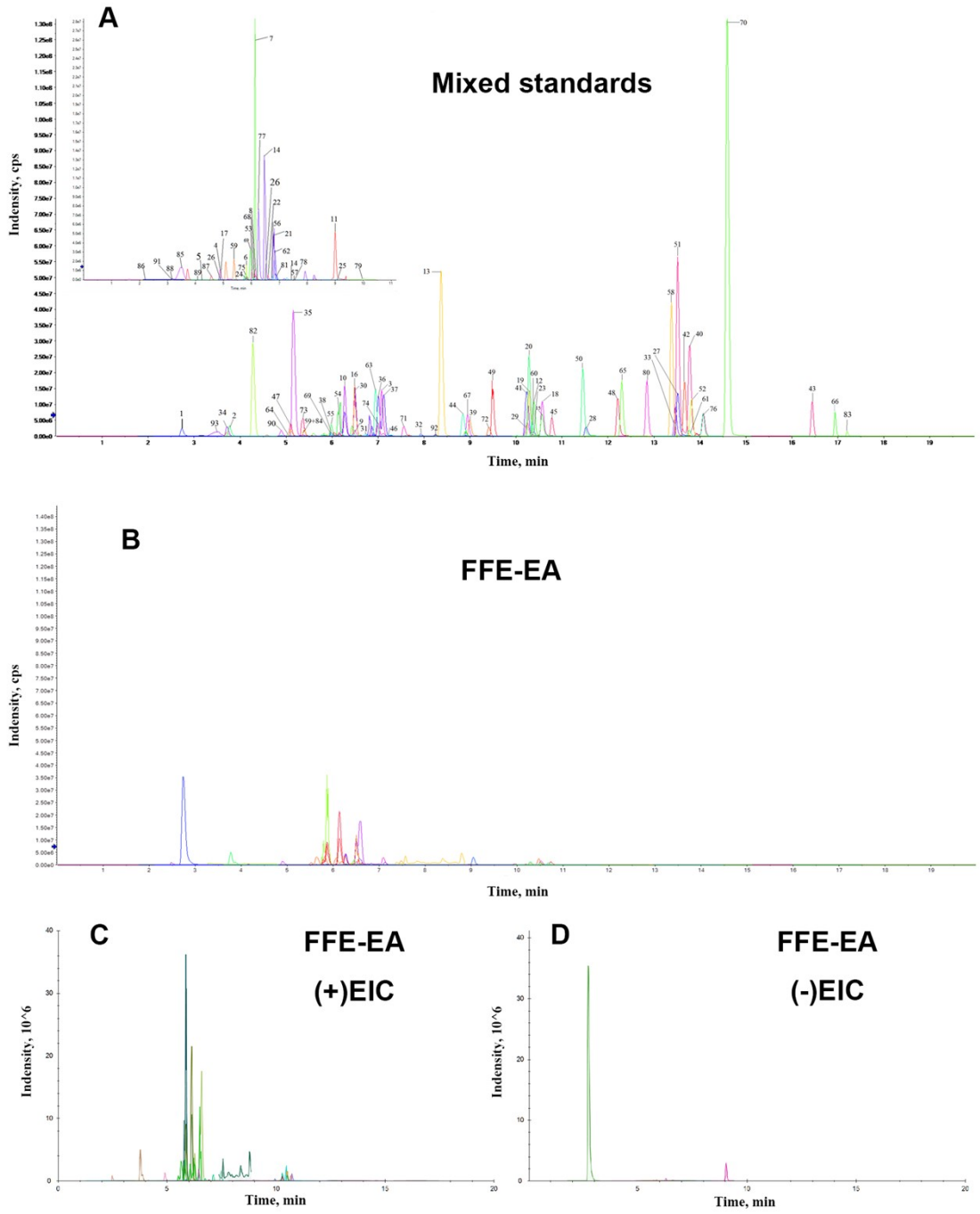

Fig. S1. UHPLC-MS chromatograms. (A) Total ion chromatograms of MRM traces from mixed standards. (B) Total ion chromatograms of MRM traces from FFE-EA. (C) Extracted ion chromatograms of MRM traces in positive ion mode from FFE-EA. (D) Extracted ion chromatograms of MRM traces in negative ion mode from FFE-EA. The indicated number of each peak in (A) was consistent with that of the compound in Table S1. The abbreviation "cps" in the ordinate means counts per second.

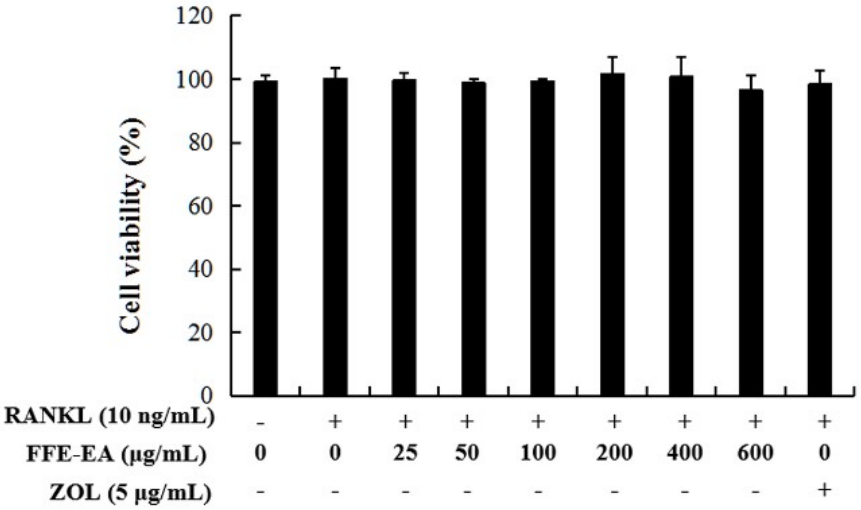

Fig. S2. Effects of FEE-EA on the viability of RAW264.7 cells. RAW264.7 cells were pre-treated with indicated concentrations of FEE-EA or ZOL (zoledronic acid; 5 μg/mL) for 1 hr and then treated with RANKL (10 ng/mL) or vehicle for another 24 hrs. Cytotoxicity was assessed using MTT assays.