

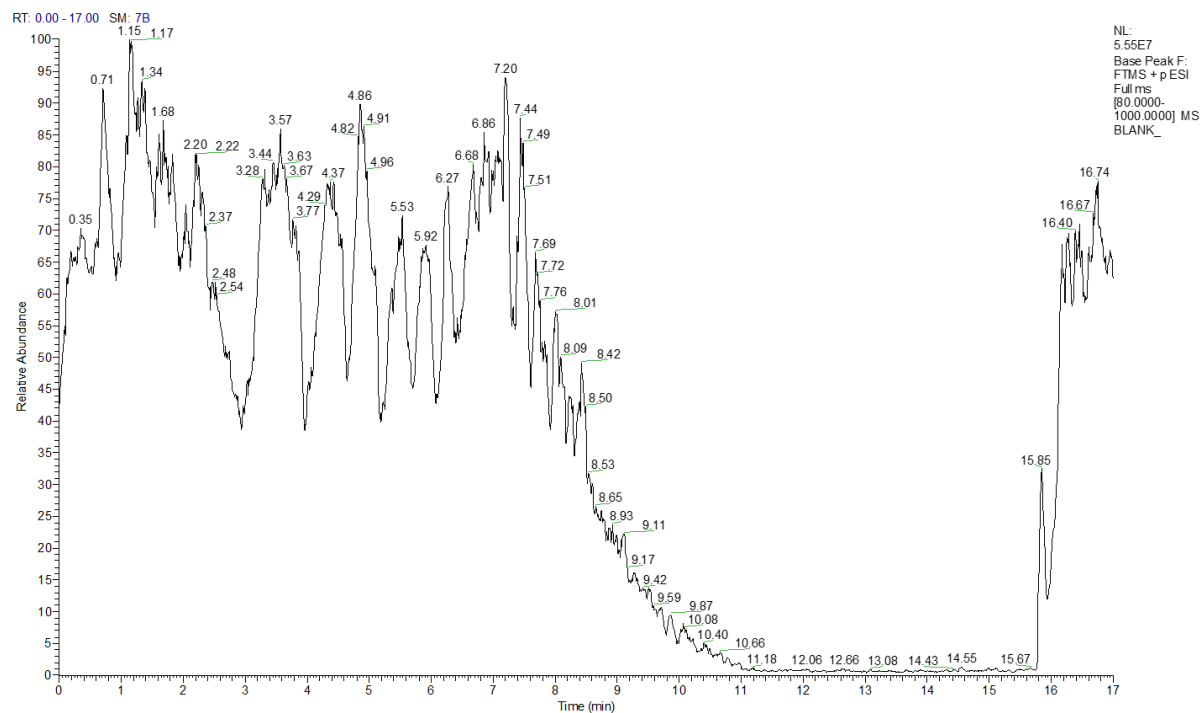
A 70% ethanol *Neorhodomela munita* extracts attenuates RANKL-induced osteoclast activation and H₂O₂-induced osteoblast apoptosis in vitro

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Supplementary Figures

Figure S1. LC/MS chromatograms of a 70% ethanol *Neorhodomela munita* extract (EN)

Blank



EN

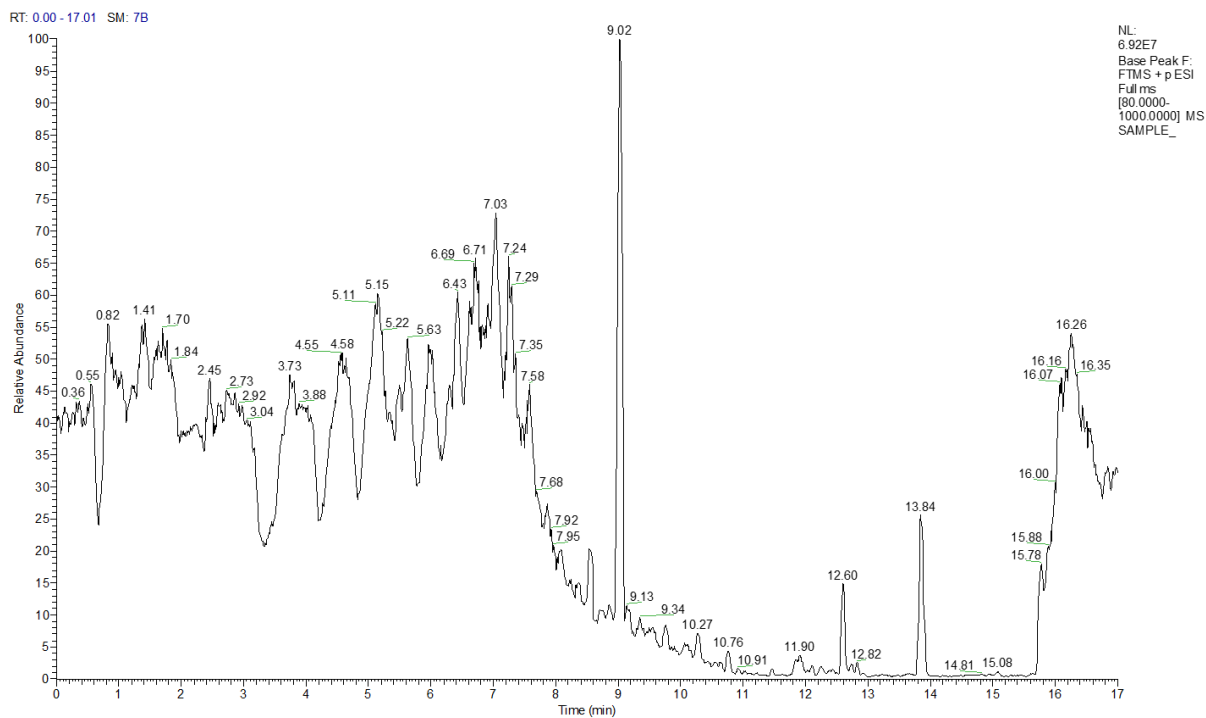
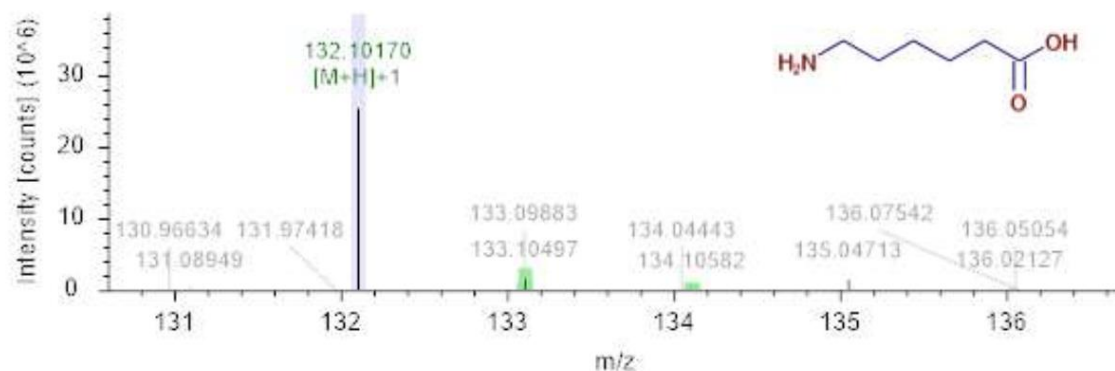


Figure S2. LC/MS analysis of a 70% ethanol *Neorhodomela munita* extract (EN)

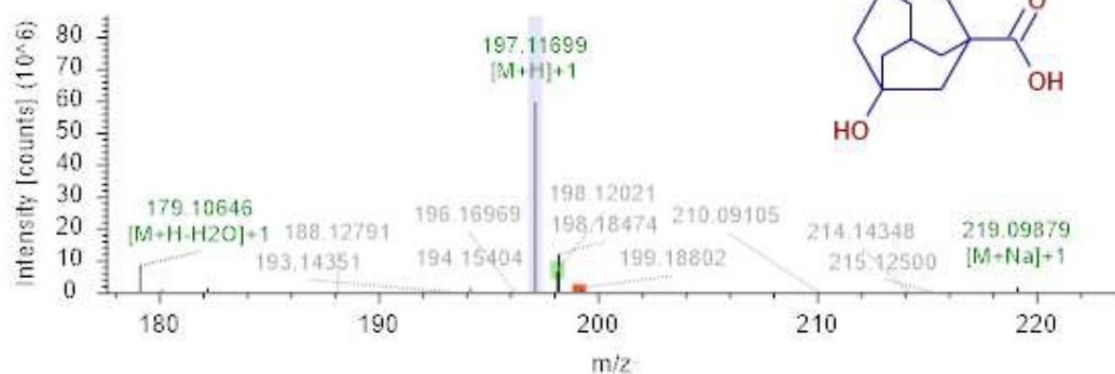
No. 1. 6-Aminocaproic acid

SAMPLE_(F2)#377, RT=0.789 min, MS1, FTMS(+)
C6 H13 N O2 as [M+H]⁺1



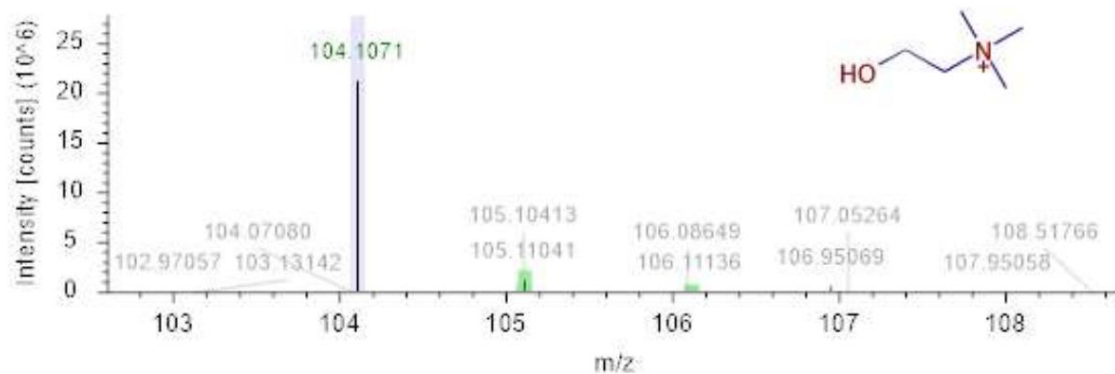
No. 2. 1-carboxy-3-hydroxyadamantane

SAMPLE_(F2)#3373, RT=7.263 min, MS1, FTMS(+)
C11 H16 O3 as [M+H]⁺1



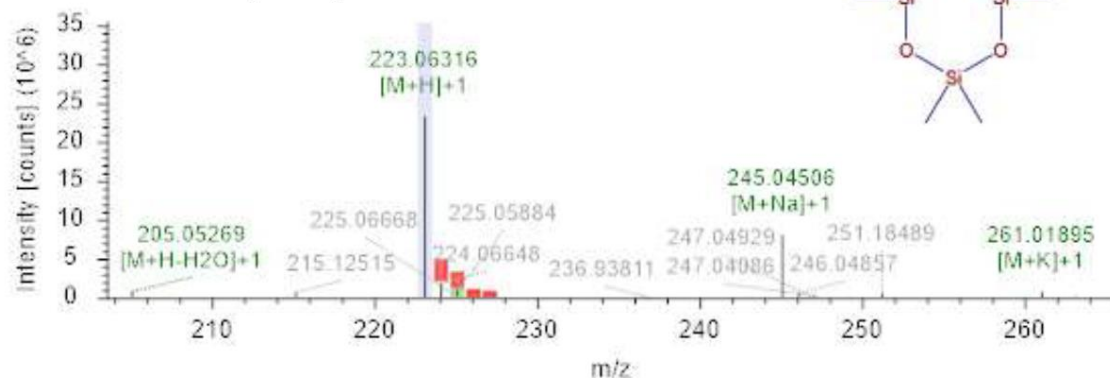
No. 3. Choline

SAMPLE_(F2)#335, RT=0.705 min, MS1, FTMS(+)
C5 H13 N O as [M+H]⁺1



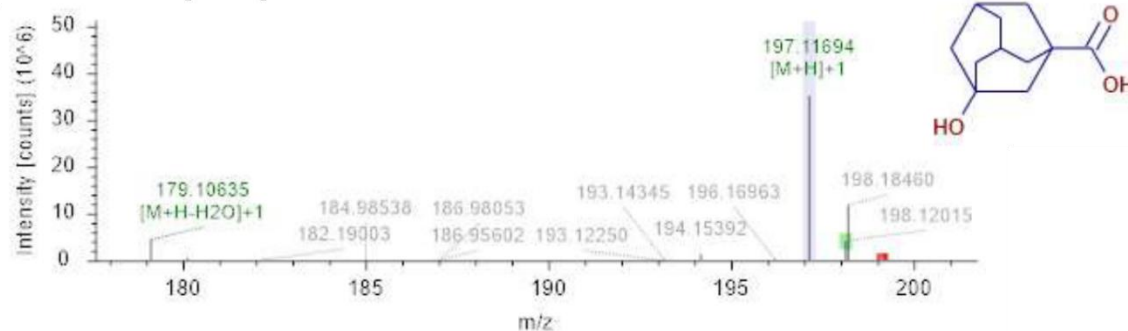
No. 4. Hexamethylcyclotrisiloxane

SAMPLE_(F2)#3012, RT=6.527 min, MS1, FTMS(+)
C6 H18 O3 Si3 as [M+H]⁺1



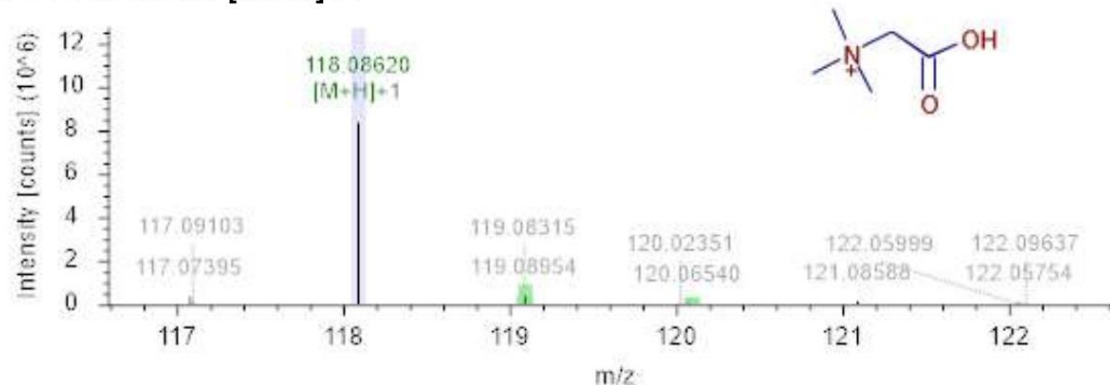
No. 5. 1-carboxy-3-hydroxyadamantane

SAMPLE_(F2)#3457, RT=7.435 min, MS1, FTMS(+)
C11 H16 O3 as [M+H]⁺1



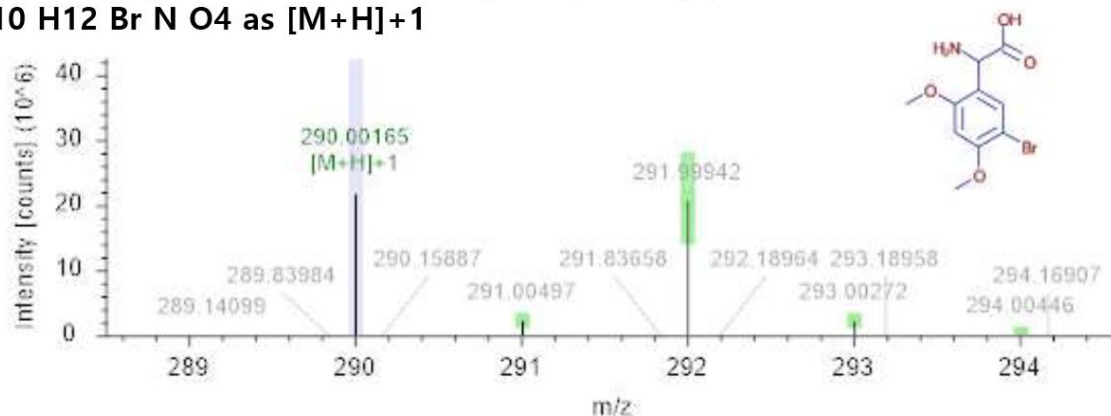
No. 6. Betaine

SAMPLE_(F2)#389, RT=0.812 min, MS1, FTMS(+)
C5 H11 N O2 as [M+H]⁺1



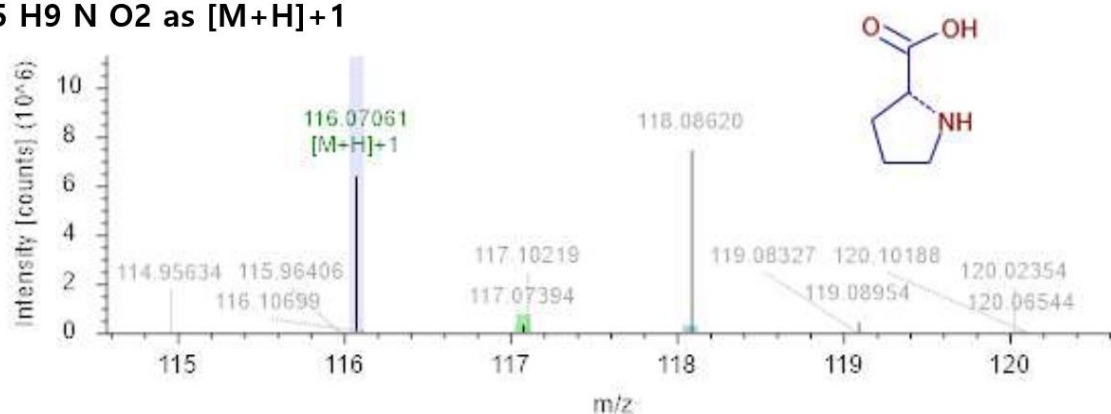
No. 7. Amino(5-bromo-2,4-dimethoxyphenyl)acetic acid

SAMPLE_(F2)#3048, RT=6.601 min, MS1, FTMS(+)
C10 H12 Br N O4 as [M+H]⁺1



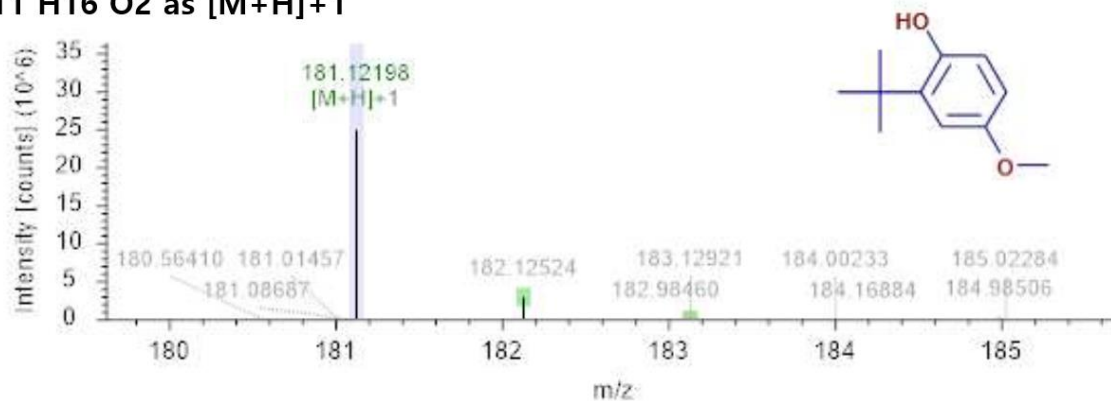
No. 8. D-(+)-Proline

SAMPLE_(F2)#377, RT=0.789 min, MS1, FTMS(+)
C5 H9 N O2 as [M+H]⁺1



No. 9. 2-tert-Butyl-4-methoxyphenol

SAMPLE_(F2)#3964, RT=8.548 min, MS1, FTMS(+)
C11 H16 O2 as [M+H]⁺1



No. 10. Nicotinamide

SAMPLE_(F2)#605, RT=1.251 min, MS1, FTMS(+)
C6 H6 N2 O as [M+H]⁺1

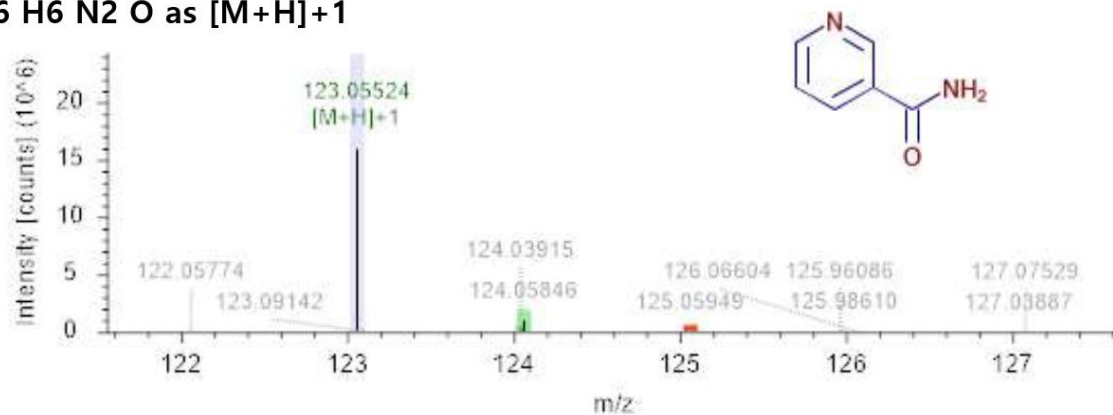


Table S1. LC/MS profile of 4 compounds with $\geq 90\%$ match to the mzCloud spectral library

Area (Max.)	ChemSpider Results	mzCloud Match (%)	Best Match (%)	mzCloud Match (%)	Name
62495868.421	116	99.6	70.2		Nicotinamide
59229768.358	32	95.8	98.3		Erucamide
18905808.584	52	96	98.4		4-Guanidinobutyric acid
3714558.609	87	93.7	95.3		Monolein

No.	Formula	Candidate M.W.	RT[min]
1	C ₆ H ₆ N ₂ O	122.048	1.25
2	C ₂₂ H ₄₃ NO	337.3337	12.599
3	C ₅ H ₁₁ N ₃ O ₂	145.0848	1.18
4	C ₂₁ H ₄₀ O ₄	356.2922	10.778

Figure S3. Four candidate compounds were further screened on their anti-osteoclastic effect *in vitro*. (Left) TRAP staining shown in dark purple was observed at 40x magnification under a light microscope (Scale bar. 500 μ m). (Right) Counts of multinuclear cells (≥ 3 nuclei) of TRAP-positive cells and larger multinuclear cells (≥ 10 nuclei) of TRAP-positive cells are presented as percentages. Data are shown as mean \pm SEM ($n \geq 3$). One-way analysis of variance (ANOVA) was utilized, followed by Bonferroni post hoc test for pairwise comparisons. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; n.s. = not significant.

