| Species | Gene | Product size (bp) | Tm (°C) | Sequence (F) | Sequence (R) |
|---------|----------|----------------------|------------|----------------------------|----------------------------|
| Mouse | GAPDH | 155 | 59 | 5'-tgctggtgctgagtatgtcg-3' | 5'-caagcagttggtggtacagg-3' |
| Mouse | MYOD | 213 | 59 | 5'-aggagcacgcacacttctct-3' | 5'-tctcgaaggcctcattcact-3' |
| Mouse | MYOG | 185 | 59 | 5'-tccagtacattgagcgccta-3' | 5'-caaatgatctcctgggttgg-3' |
| Mouse | MYL2 | 177 | 59 | 5'-aaagaggctccaggtccaat-3' | 5'-cctctctgcttgtgtggtca-3' |
| Mouse | Atrogin1 | 160 | 59 | 5'-ttcagcagcctgaactacga-3' | 5'-tgaaagetteeccaaagta-3' |
| Mouse | MuRF1 | 206 | 59 | 5'-tgaggtgcctacttgctcct-3' | 5'-tcacctggtggctattctcc-3' |
| Mouse | MSTN | 163 | 59 | 5'-acgctaccacggaaacaatc-3' | 5'-ggagtcttgacgggtctgag-3' |
| Mouse | CyclinA2 | 227 | 59 | 5'-ctgtctctttacccggagca-3' | 5'-Agtgatgtctggctgcctct-3' |
| Mouse | Ki67 | 199 | 59 | 5'-gggcgaagttcacagtcaat-3' | 5'-ctccttcactggggtcttga-3' |

Supplementary Table S1. Primer information

Supplementary Figure S1. Ki67, CyclinA2, and MSTN expression with *G. uralensis* crude water extract treatment.



Supplementary Figure S2. Procedure of *G. uralensis* fraction.



Fraction for bioassay

Supplementary Figure S3. Metabolite (NH₃) analysis in cultured media supplemented with EtOAc fraction



Supplementary Figure S4. ¹H NMR spectrum of compound 1 in MeOD-d4 (600 MHz)





Supplementary Figure S5. ¹³C NMR spectrum of compound 1 in MeOD-d4 (150 MHz)



Supplementary Figure S6. ¹H NMR spectrum of compound **2** in MeOD-*d*₄ (600 MHz)



Supplementary Figure S7. ¹³C NMR spectrum of compound **2** in MeOD-*d*₄ (150 MHz)



Supplementary Figure S8. ¹H NMR spectrum of compound 3 in Acetone-d₆ (600 MHz)



Supplementary Figure S9. ¹³C NMR spectrum of compound 3 in Acetone-*d*₆ (150 MHz)



Supplementary Figure S10. ¹H NMR spectrum of compound 4 in MeOD-d₄ (600 MHz)



Supplementary Figure S11. ¹³C NMR spectrum of compound 4 in MeOD-d₄ (150 MHz)



Supplementary Figure S12. ¹H NMR spectrum of compound 5 in CDCl₃ (600 MHz)



Supplementary Figure S13. ¹³C NMR spectrum of compound 5 in CDCl₃ (150 MHz)



Supplementary Figure S14. ¹H NMR spectrum of compound 6 in MeOD-d₄ (600 MHz)



Supplementary Figure S15. ¹³C NMR spectrum of compound 6 in MeOD-d₄ (150 MHz)



Supplementary Figure S16. ¹H NMR spectrum of compound 7 in MeOD-d₄ (600 MHz)



Supplementary Figure S17. ¹³C NMR spectrum of compound 7 in MeOD-d4 (150 MHz)



Supplementary Figure S18. ¹H NMR spectrum of compound 8 in DMSO-d₆ (600 MHz)



Supplementary Figure S19. ¹³C NMR spectrum of compound 8 in DMSO-d₆ (150 MHz)



Supplementary Figure S20. ¹H NMR spectrum of compound 9 in MeOD-d₄ (600 MHz)



Supplementary Figure S21. ¹³C NMR spectrum of compound 9 in MeOD-d4 (150 MHz)



Supplementary Figure S22. ¹H NMR spectrum of compound 10 in DMSO-d₆ (600 MHz)



Supplementary Figure S23. ¹³C NMR spectrum of compound 10 in DMSO-d₆ (150 MHz)