

SUPPLEMENTARY INFORMATION FOR JOURNAL OF CHEMICAL ECOLOGY

INDIVIDUAL VARIATION IN ALKALOID CONTENT OF POISON FROGS OF MADAGASCAR (*Mantella*; MANTELLIDAE)VALERIE C. CLARK^{*1}, VALÉRIE RAKOTOMALALA², OLGA RAMILJAONA², LEIF ABRELL³, and BRIAN L. FISHER⁴¹*Department of Chemistry and Chemical Biology, Cornell University, Ithaca, NY 14853;* ²*Department of Animal Biology, University of Antananarivo, Madagascar, 101;* ³*Department of Chemistry, University of Arizona, AZ 85721;* ⁴*Department of Entomology, California Academy of Sciences, San Francisco, CA 94103.*

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Chromatograms of the 22 *Mantella* spp. individuals sampled from Ranomafana region in 2003, and of the two Daly Standards from Vato (December 1989, 10 combined skins) and Saha (January 1993, 17 combined skins).

Partial chromatograms are shown to highlight only the minor and major alkaloids detected *via* GC-TOF-MS; for each sample, the EI Total Ion Current (TIC) chromatogram is shown above, and the CI (with NH₃) TIC chromatogram is shown below. AMNH (AMNH 1683##) and UADBA (U#) deposition numbers, or TASEd live-released frog code (L#) are indicated and respective chromatograms ordered as in Table 1 of the manuscript.

***Mantella baroni* frogs from three localities of the Ranomafana National Park:** Vohiparara—Kidonavo Stream (includes a single *Mantella madagascariensis*); Sahavondronana-Ampitavarivo Stream/ Bridge of Namorona River; Vatoharanana—Ankovoka River. ***Mantella bernhardi*:** Ampasimpotsy village forest fragments.

FIGURE LEGEND FORMAT:

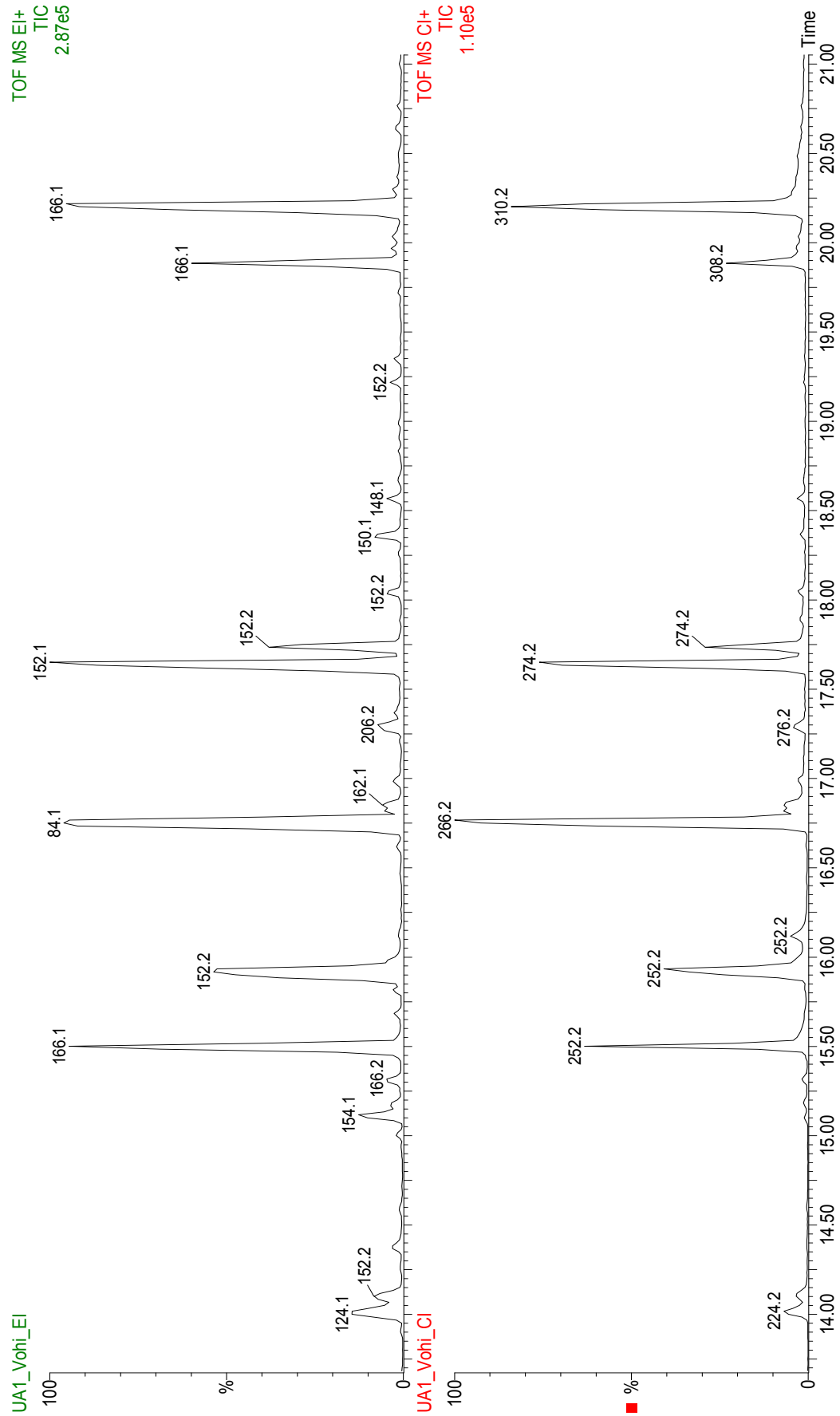
S#. *Mantella* frog species (abbreviated deposition number) from locality (AMNH field ##### if applicable).

Major alkaloids: relative abundance >70% in EI (In Table 1 as ‘ \oplus ’)

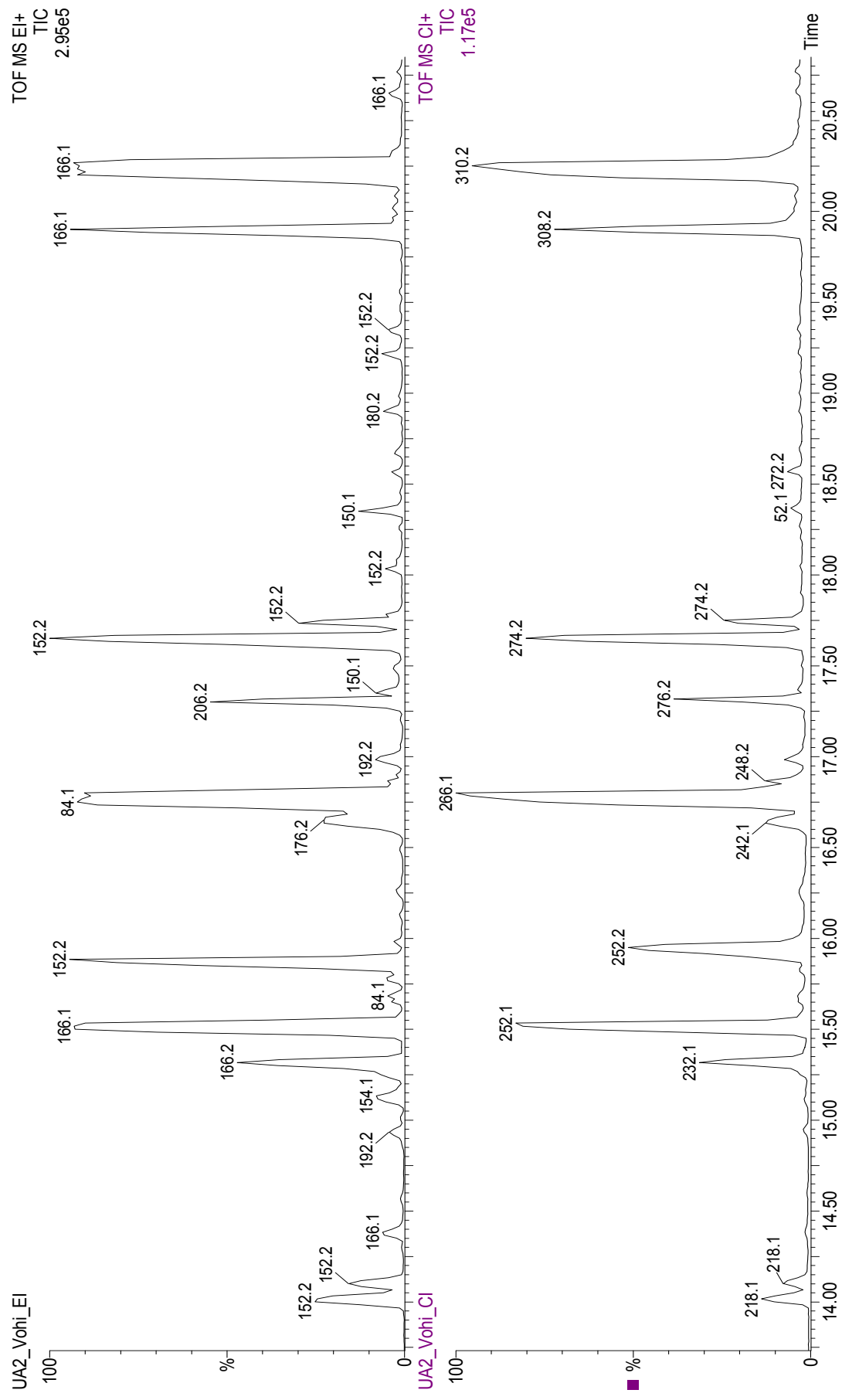
Minor alkaloids: 10%< relative abundance <70% (In Table 1 as ‘ \ominus ’)

Note that Major and Minor alkaloids are listed as: **MW Code** (retention time in min):

Numbers listed at tops of GC peaks are MS base peaks. Some peaks are not accounted for, if they were unknown alkaloids or present as part of an unresolvable mixture; these as-yet unknown/unidentified compounds could be addressed in future publications.



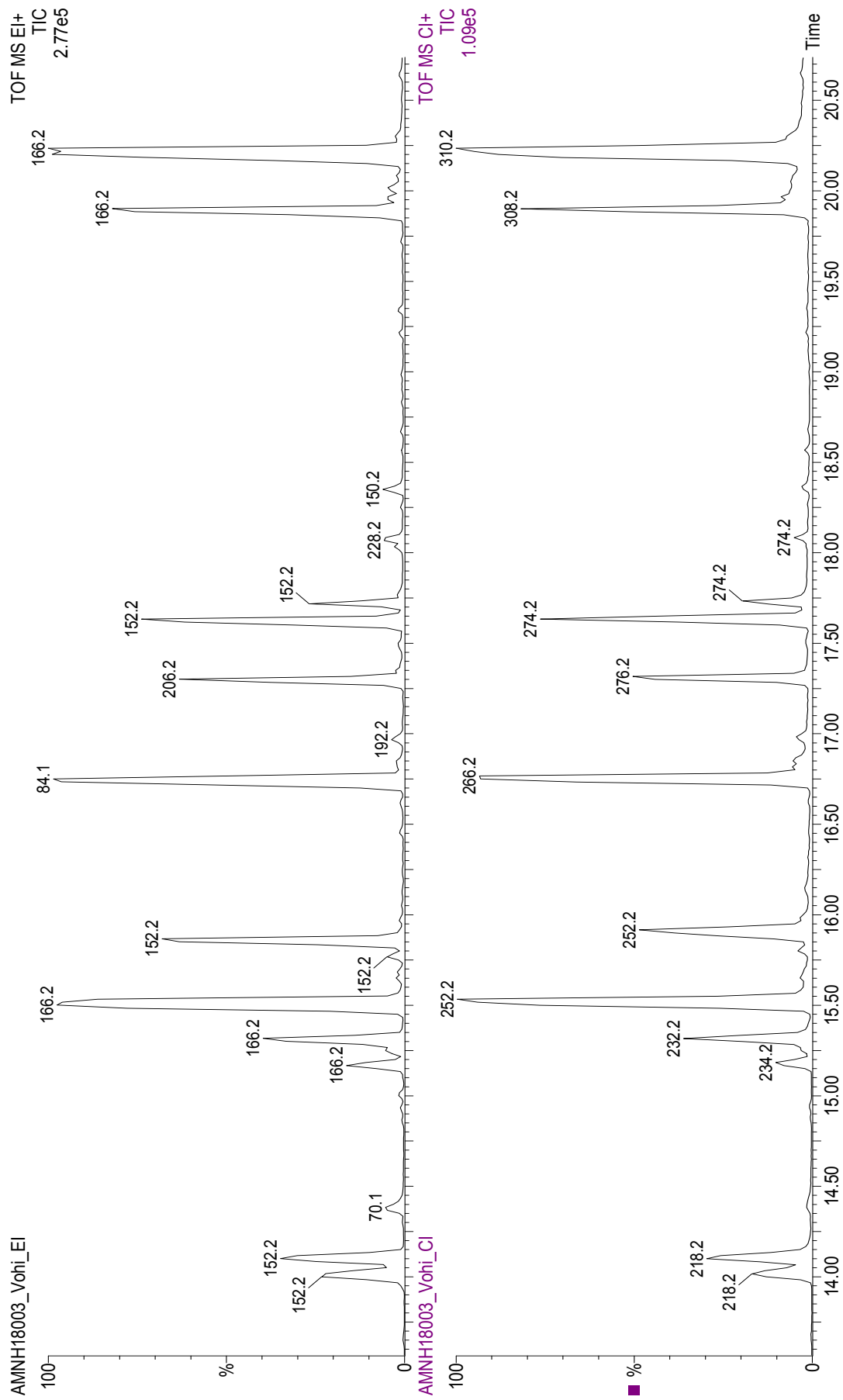
S1. *M. baroni* frog 'U1' from Vohiparara 1.
Major alkaloids: 251D (15.50), 265N (16.75), 273A (17.65), 309A (20.20).
Minor alkaloids: 223H" (14.00), 251O (15.92), 293D (18.35), 307G (19.88).



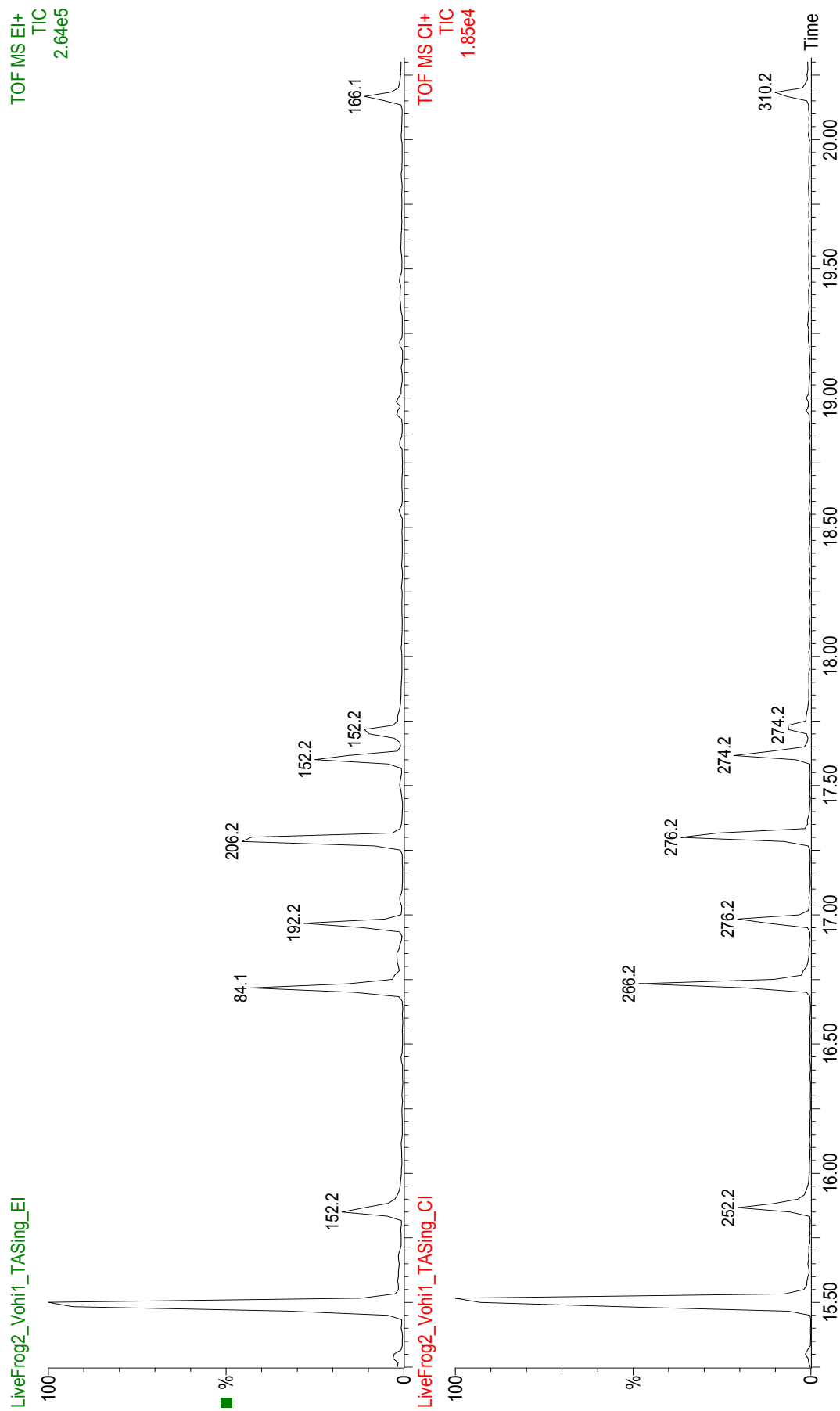
S2. *M. baroni* frog 'U2' from Vohiparara 1.

Major alkaloids: 251D (15.52), 251O (15.87), 265N (16.75), 273A (17.65), 307G (19.88), 309A (20.20).

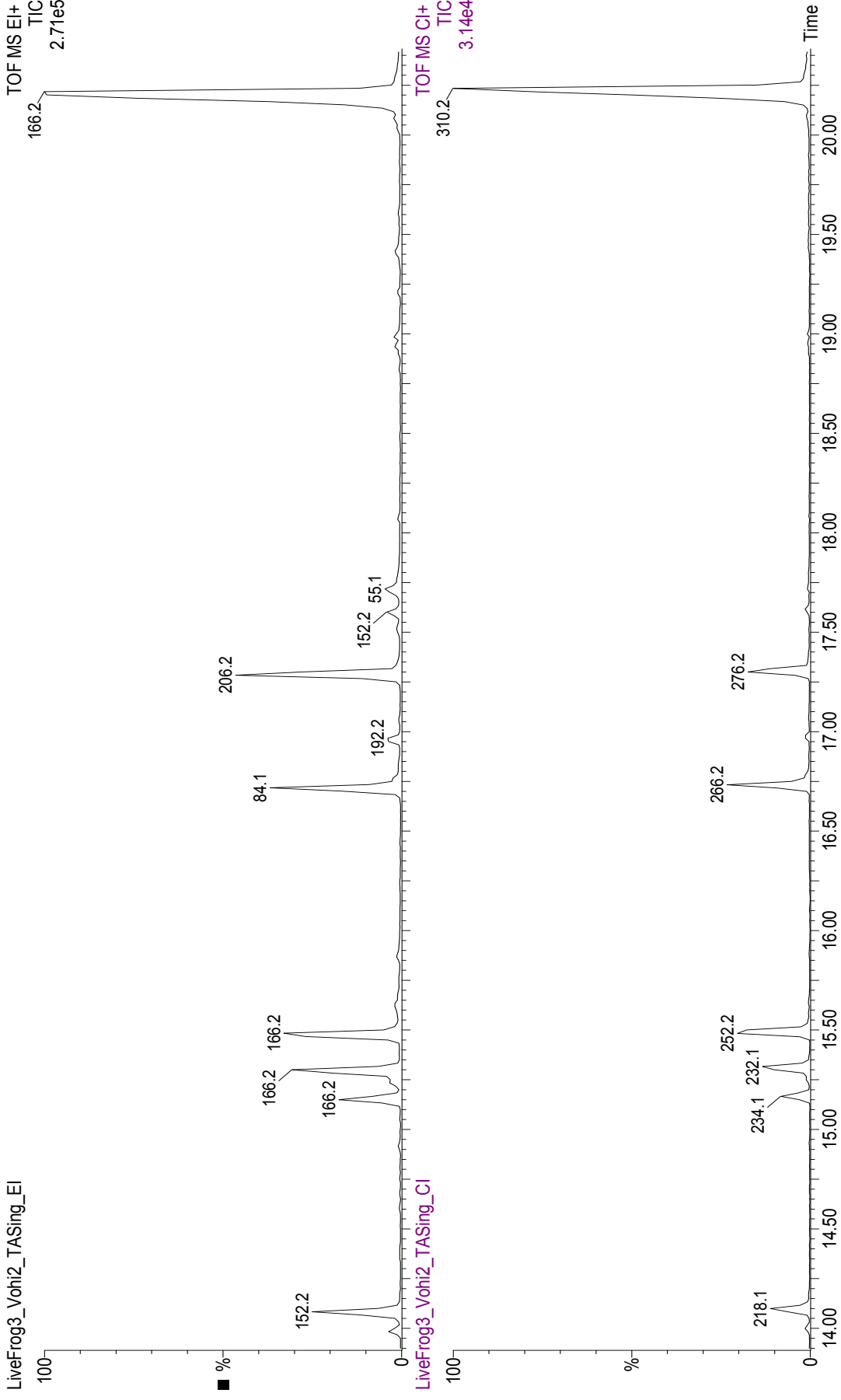
Minor alkaloids: 217A (14.00), 217B (14.10), 231A (15.32), 241F (16.65), 275C' (17.30), 293D (18.35).



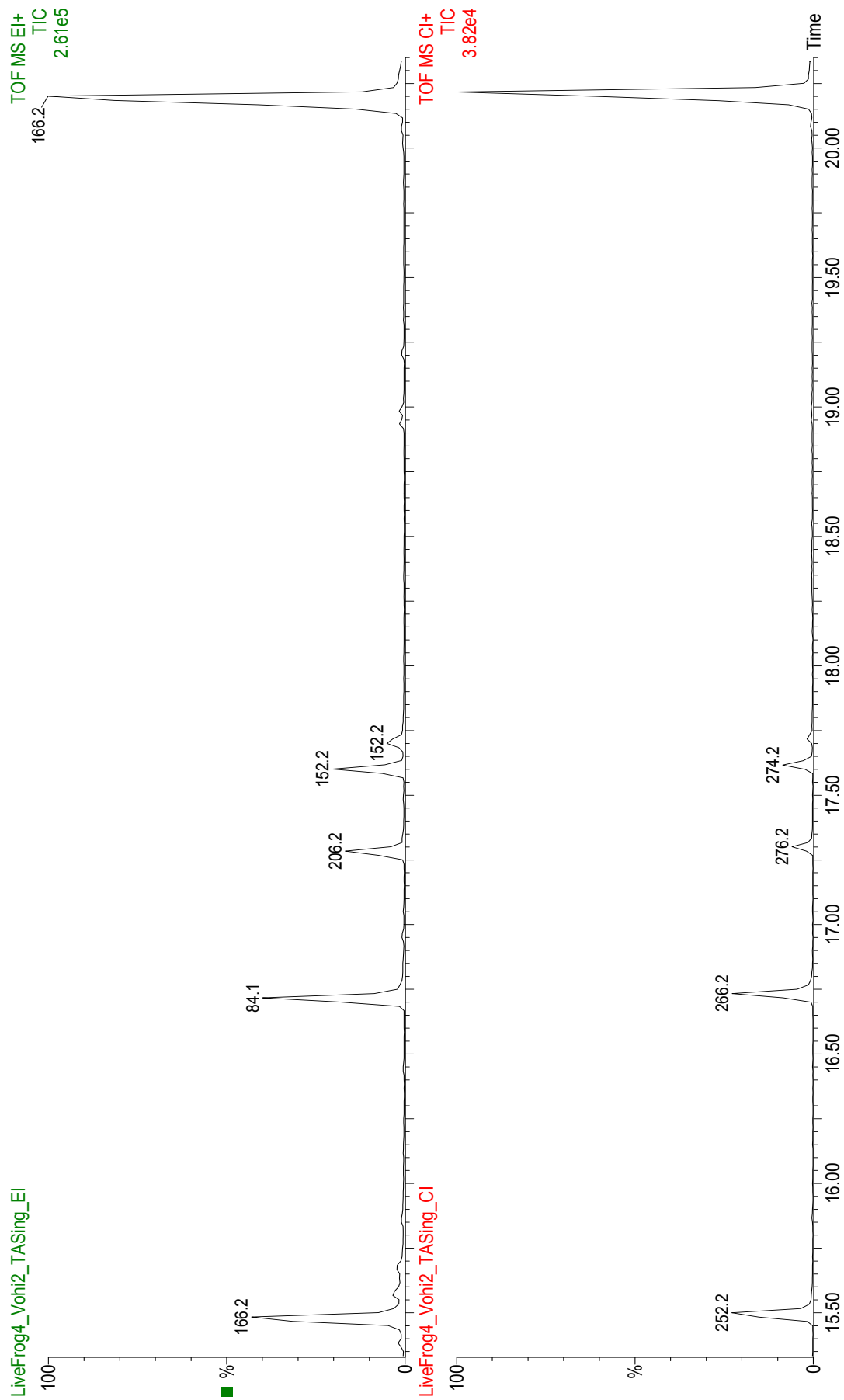
S3. *M. baroni* frog '82' from Vohiparara 1 (AMNH field # 18003).
Major alkaloids: 251D (15.50), 251O (15.87), 265N (16.75), 273A (17.64), 307G (19.90), 309A (20.20).
Minor alkaloids: 217A (14.00), 217B (14.10), 233A (15.16), 231A (15.32), 275C' (17.30).



S4. *M. baroni* frog 'L2' from Vohiparara 1 (TASed frog released alive).
Major alkaloids: 251D (15.47).
Minor alkaloids: 251O (15.85), 265N (16.72), 275C (16.97), 275C' (17.28), 273A (17.60), 309A (20.17).



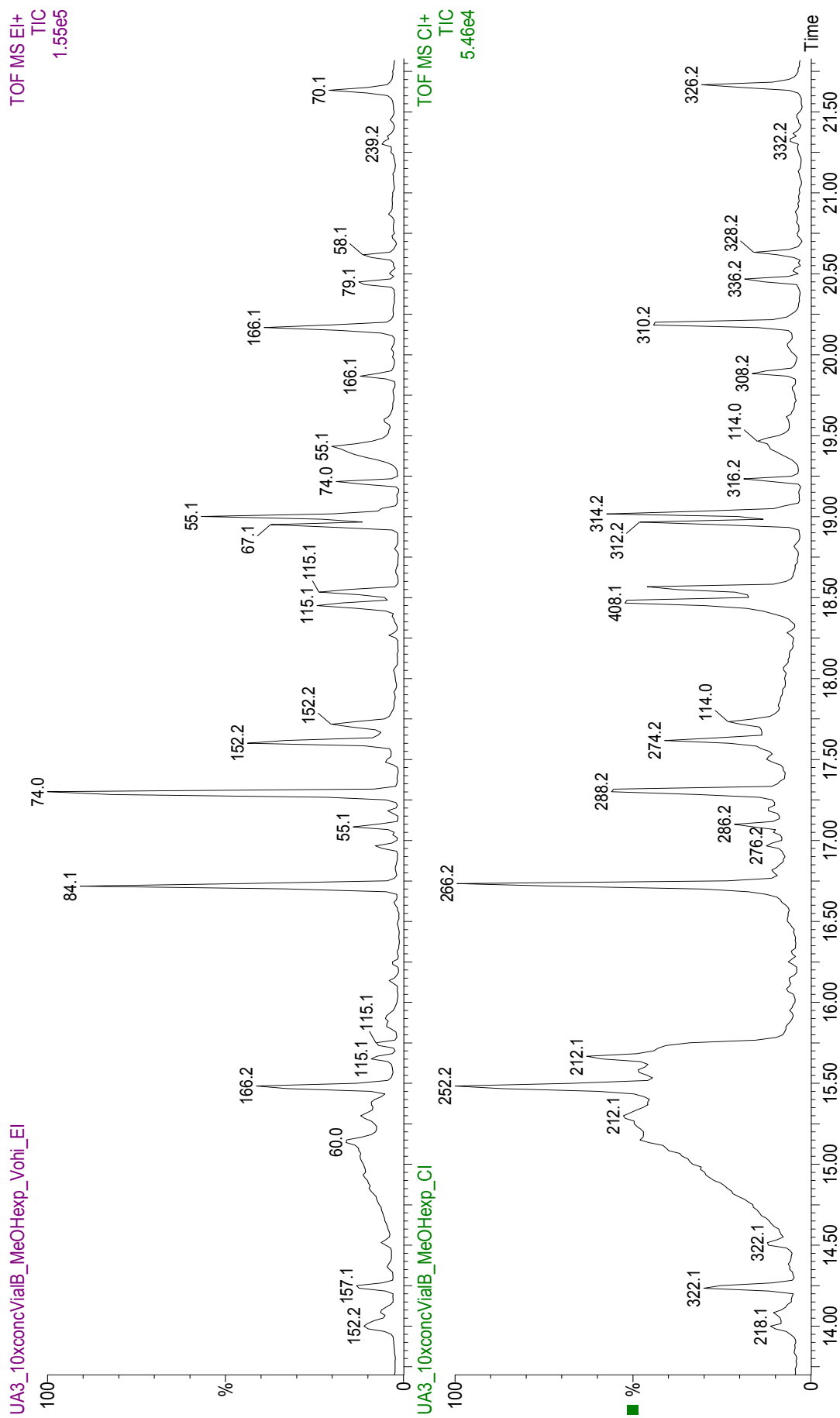
S5. *M. baroni* frog 'L3' from Vohiparara 2 (TASed frog released alive).
Major alkaloids: 309A (20.22).
Minor alkaloids: 217B (14.10), 233A (15.15), 231A (15.30), 251D (15.48), 265N (16.72), 275C (16.97).



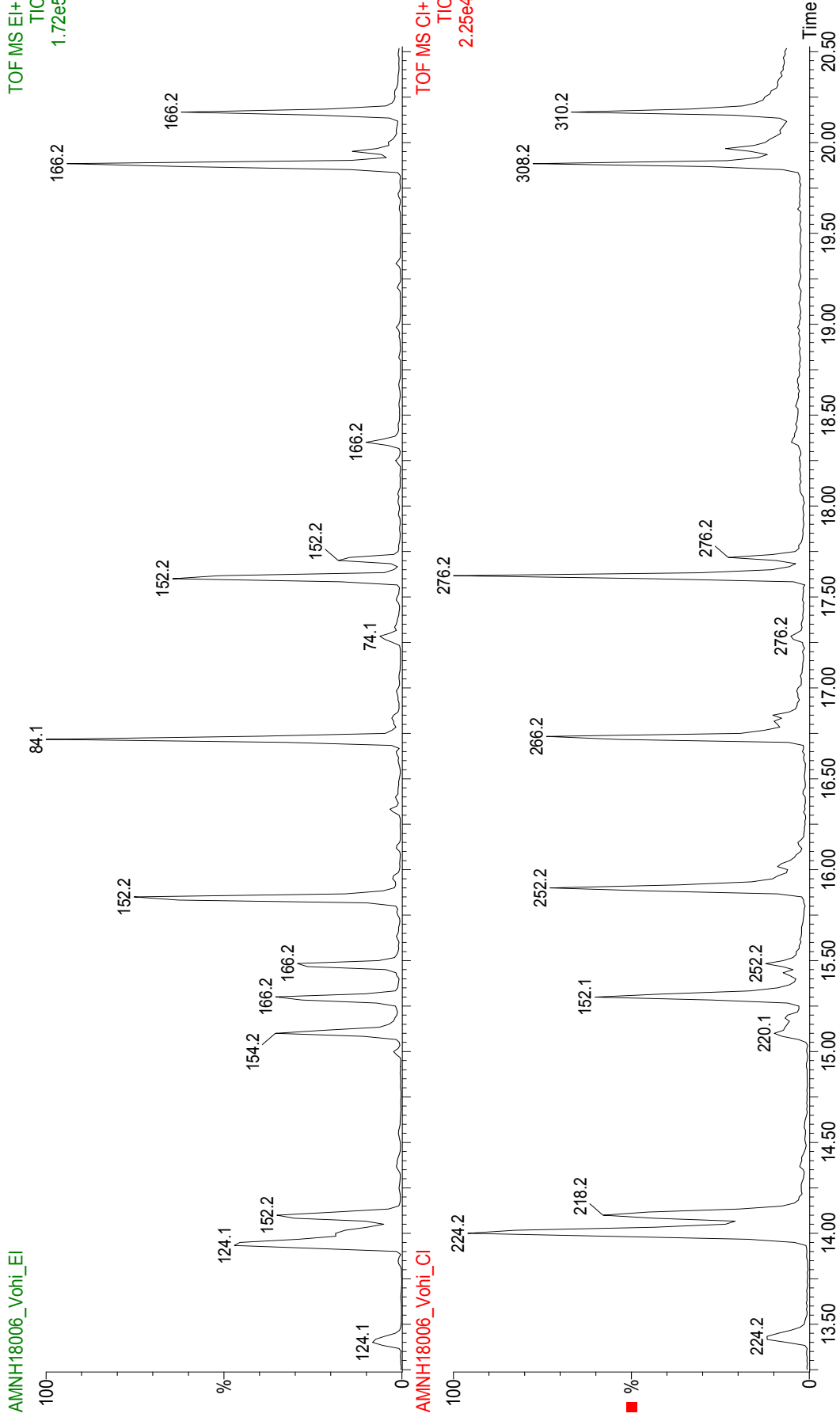
S6. *M. baroni* frog 'L4' from Vohiparara 2 (TASed frog released alive).

Major alkaloids: 309A (20.20).

Minor alkaloids: 251D (15.48), 265N (16.72), 275C' (17.28), 273A (17.60).



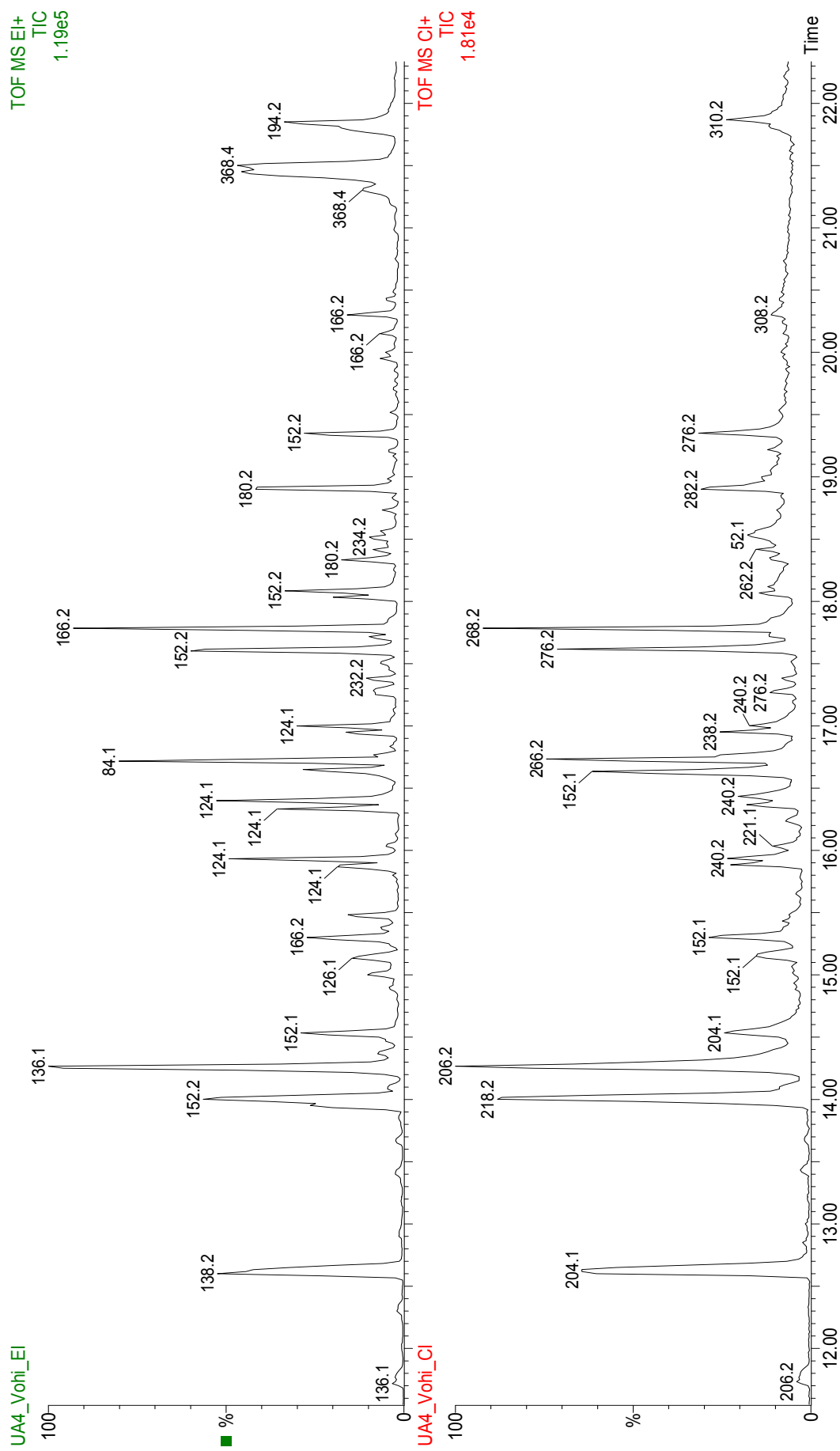
S7. *M. baroni* frog 'U3' from Vohiparara 2 (Methanol extraction of an entire unskinned frog).
Major alkaloids: 265N (16.72), 275C' (17.30).
Minor alkaloids: 217A (14.00), 251D (15.50), 273A (17.60), 307G (19.88), 309A (20.17), 325A (21.64).



S8. *M. baroni* frog '83' from Vohiparara 2 (AMNH field # 18006).

Major alkaloids: 251O (15.87), 265N (16.72), 307G (19.88).

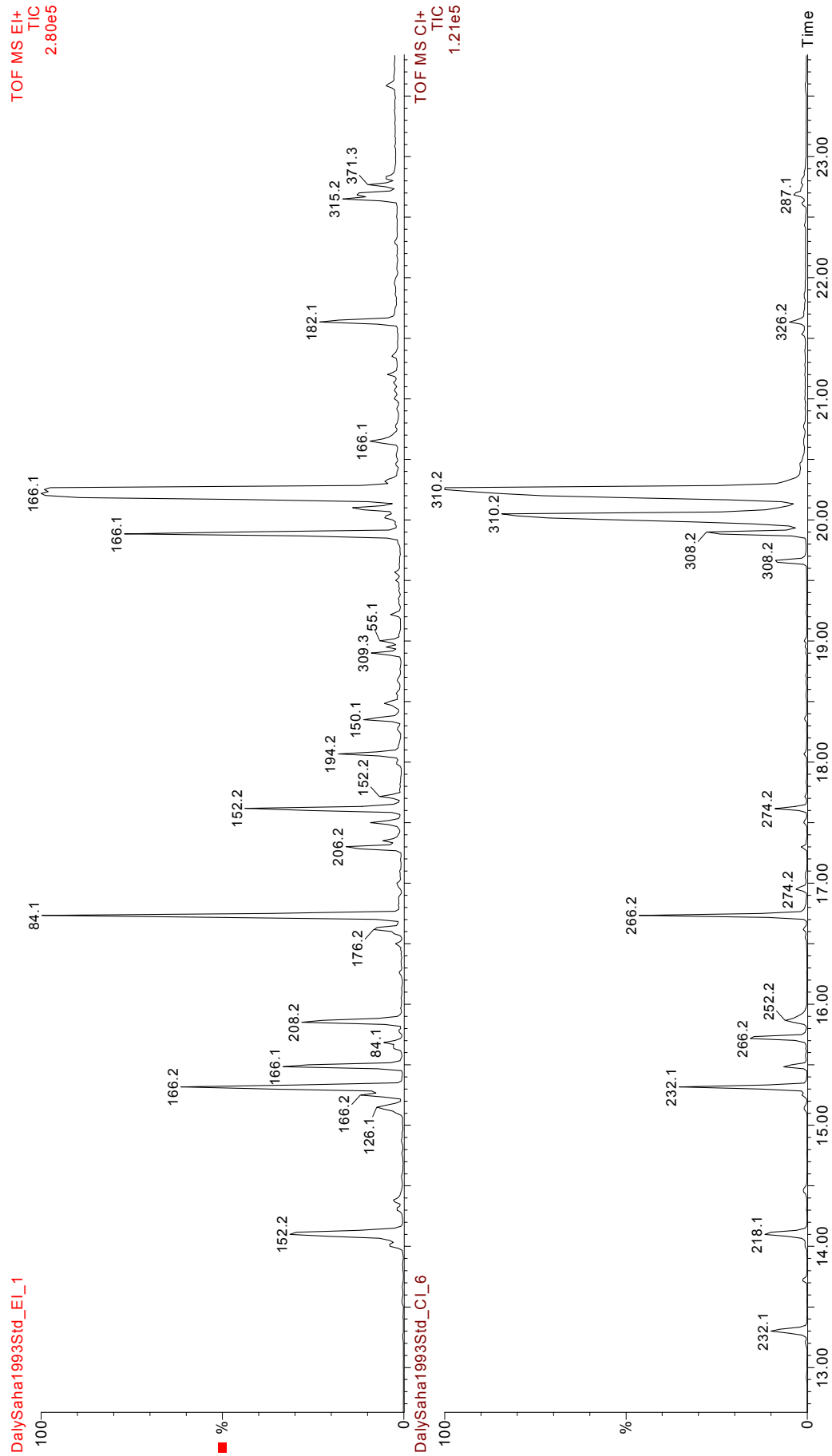
Minor alkaloids: 223H" (13.93), 217A (14.03), 217B (14.10), 231A (15.31), 251D (15.48), 273A (17.62), 275E (17.70), 291G (18.35), 309A (20.17).



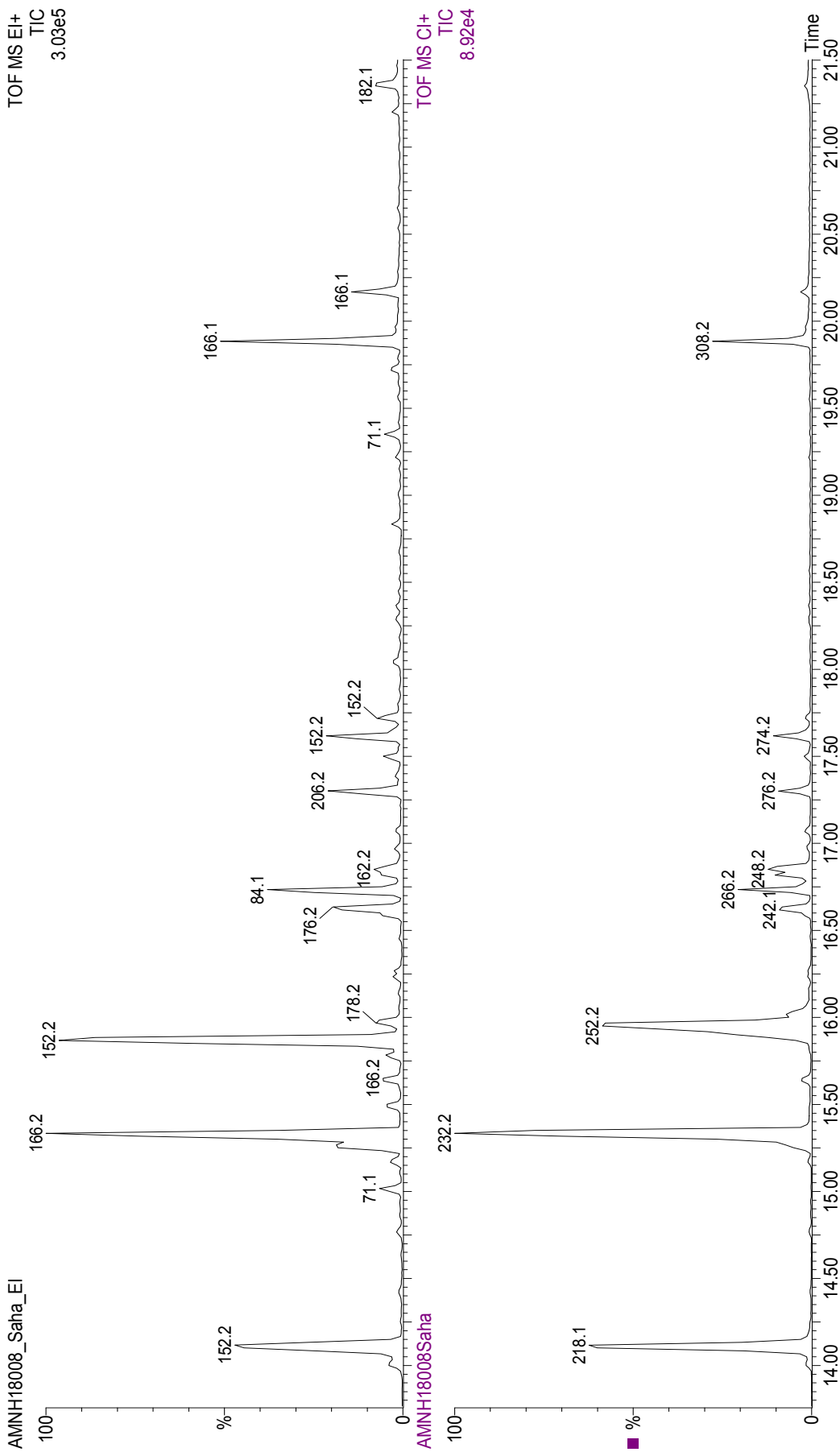
S9. *Mantella madagascariensis* frog 'U4' from Vohiparara 2.

Major alkaloids: 265N (16.72), 267N (17.78).

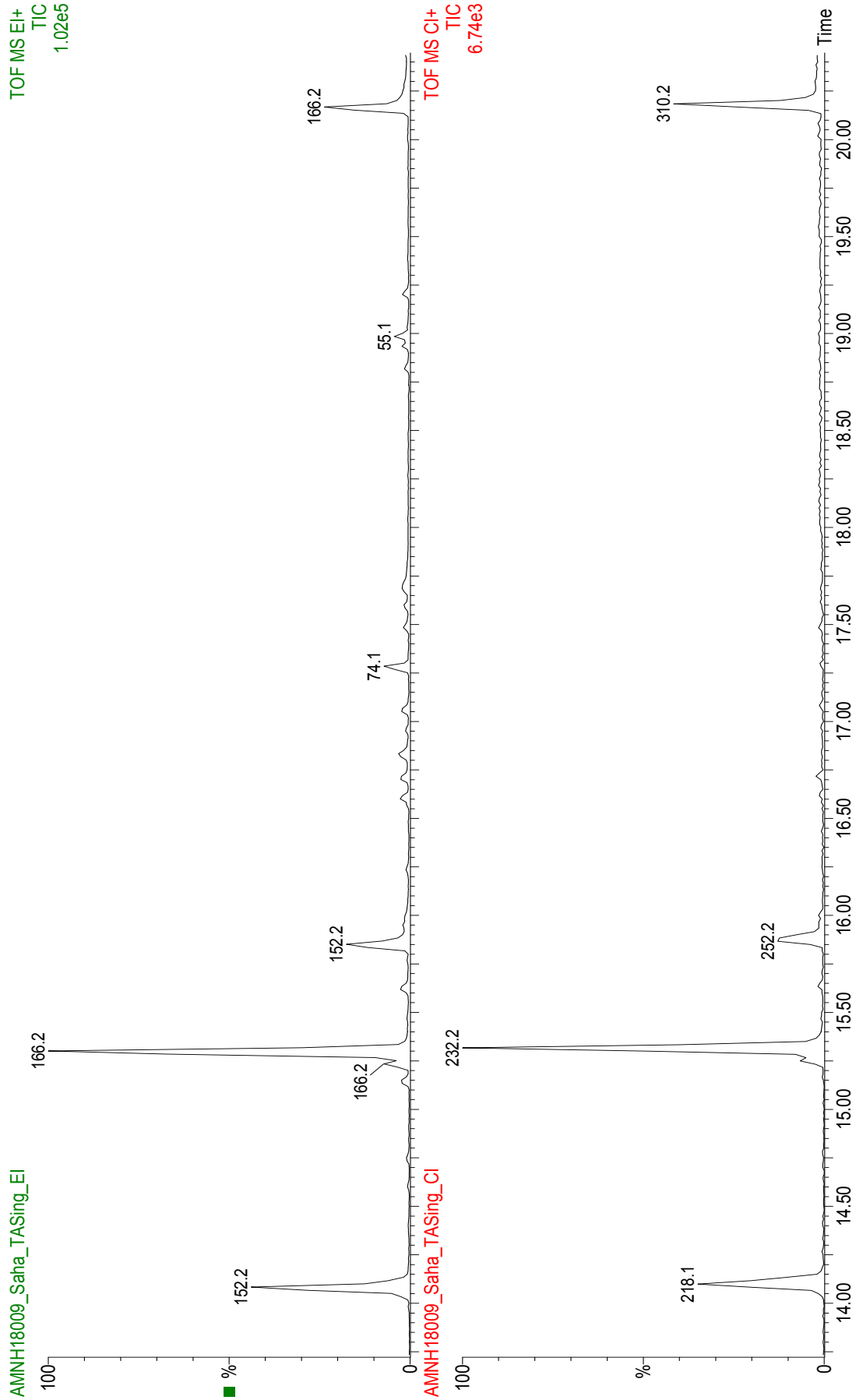
Minor alkaloids: 203A (12.60), 205A (12.60), 217A (14.00), 223H'' (14.03), 217B (14.10), 236 (15.15), 236' (15.30), 251D (15.48), 237G (15.88), 239K (15.93), 237G' (16.33), 239K' (16.40), 222 (16.65), 275E (17.62), 307D (20.30).



S10. *M. baroni* frogs from Sahavondrona (January 1993, 17 combined skins; provided by John W. Daly)
Major: 265N (16.73), 307A (19.88), 309A (20.22).
Minor: 217B (14.10), 233A (15.25), 231A (15.32), 251D (15.48), 281G (17.35), 271F (17.50), 273A (17.62), 265F (18.07), 293D (18.35), 325A (21.63).



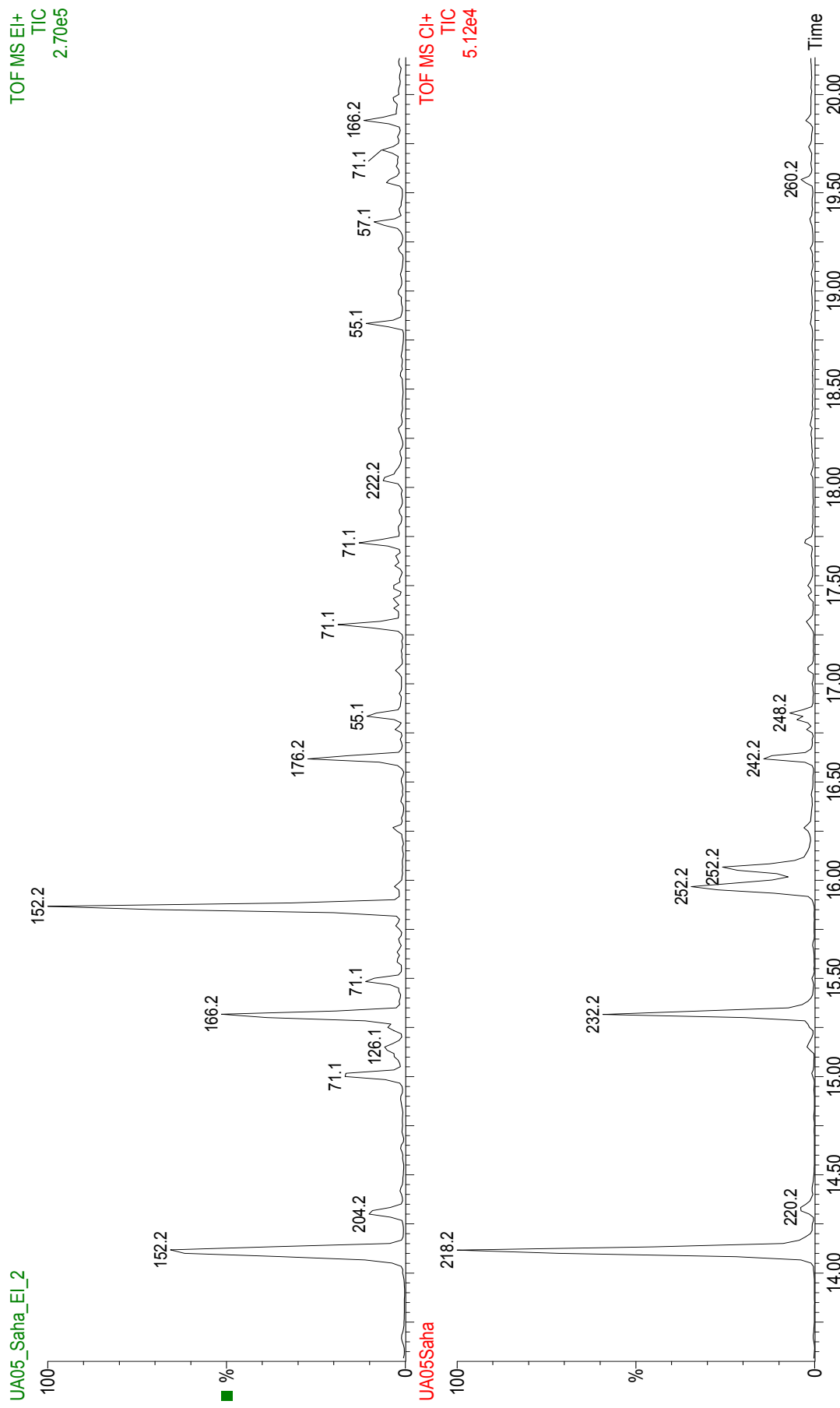
S11. *M. baroni* frog '84' from Sahavondrona (AMNH field #18008)
Major alkaloids: 231A (15.33), 251O (15.87).
Minor alkaloids: 217B (14.10), 241F (16.63), 265N (16.73), 275C' (17.30), 273A (17.62), 307G (19.88), 309A (20.22).



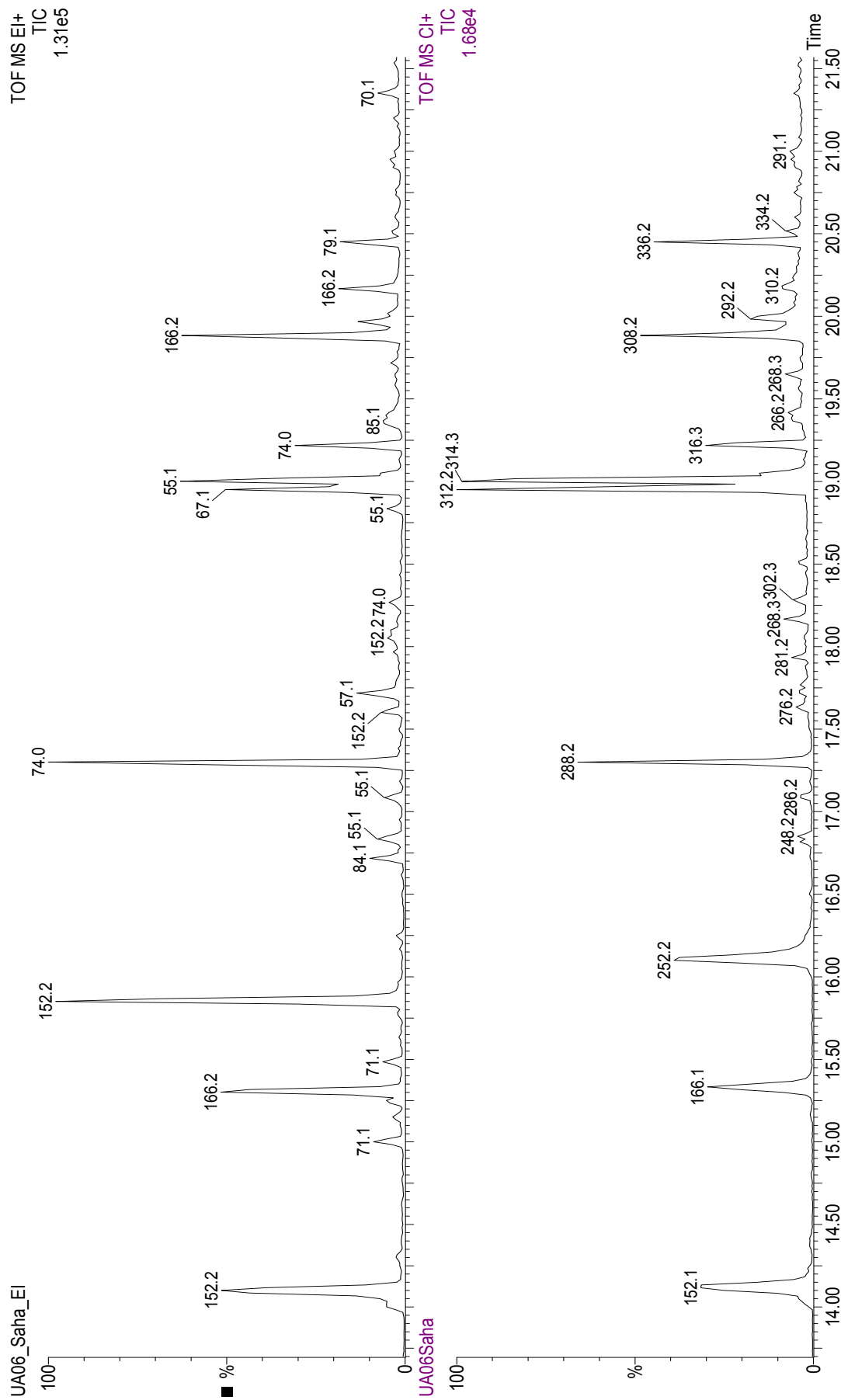
S12. *M. baroni* frog '57' from Sahavondrona (AMNH field #18009)

Major alkaloids: 231A (15.30).

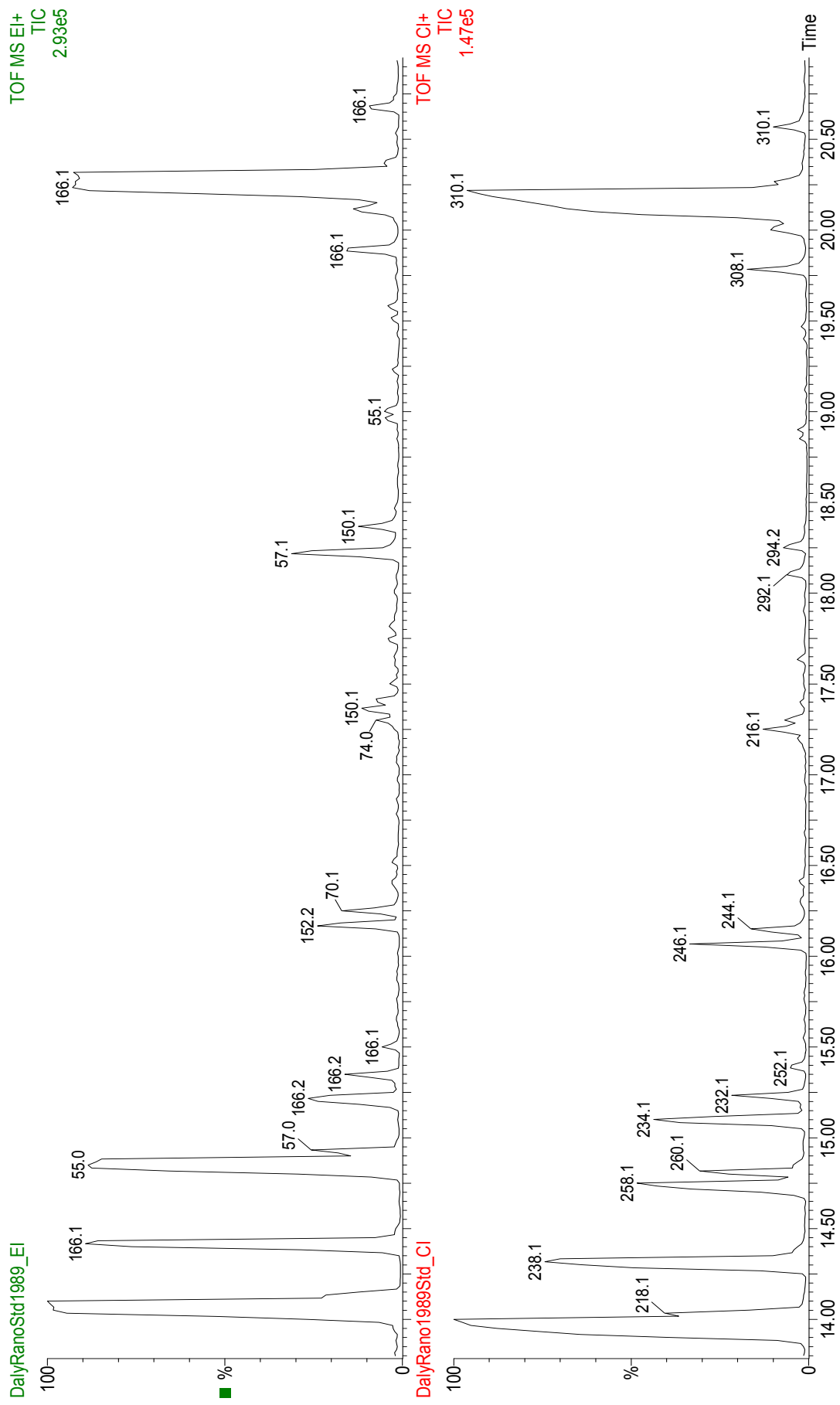
Minor alkaloids: 217B (14.10), 251O (15.85), 309A (20.17).



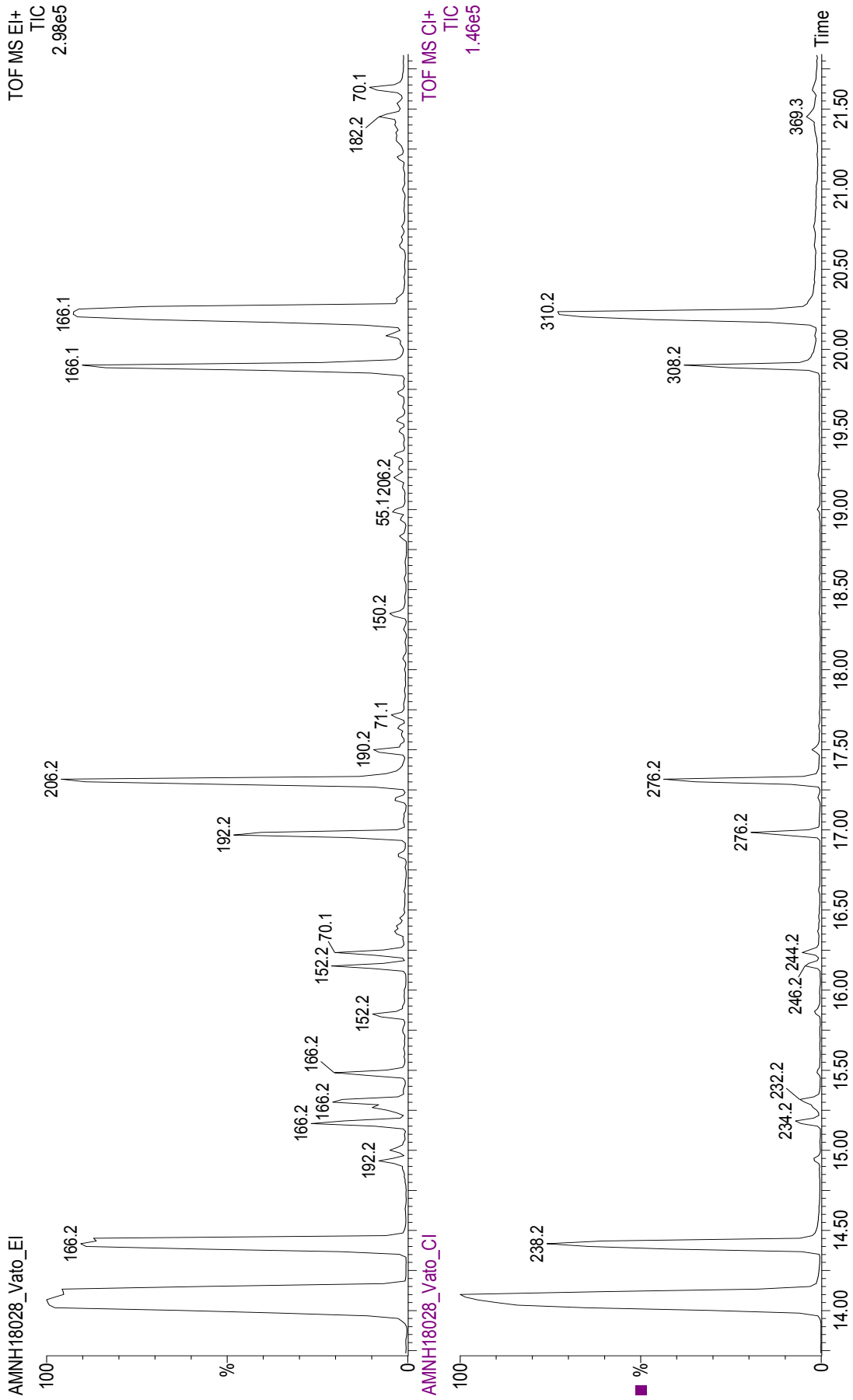
S13. *M. baroni* frog 'U5' from Sahavondrona.
Major alkaloids: 251O (15.85).
Minor alkaloids: 217B (14.10), 231A (15.32), 241F (16.62), 307G (19.87).



S14. *M. baroni* frog 'U6' from Sahavondrona.
Major alkaloids: 251O (15.85).
Minor alkaloids: 217B (14.10), 231A (15.30), 265N (16.72), 307G (19.88), 309A (20.17).



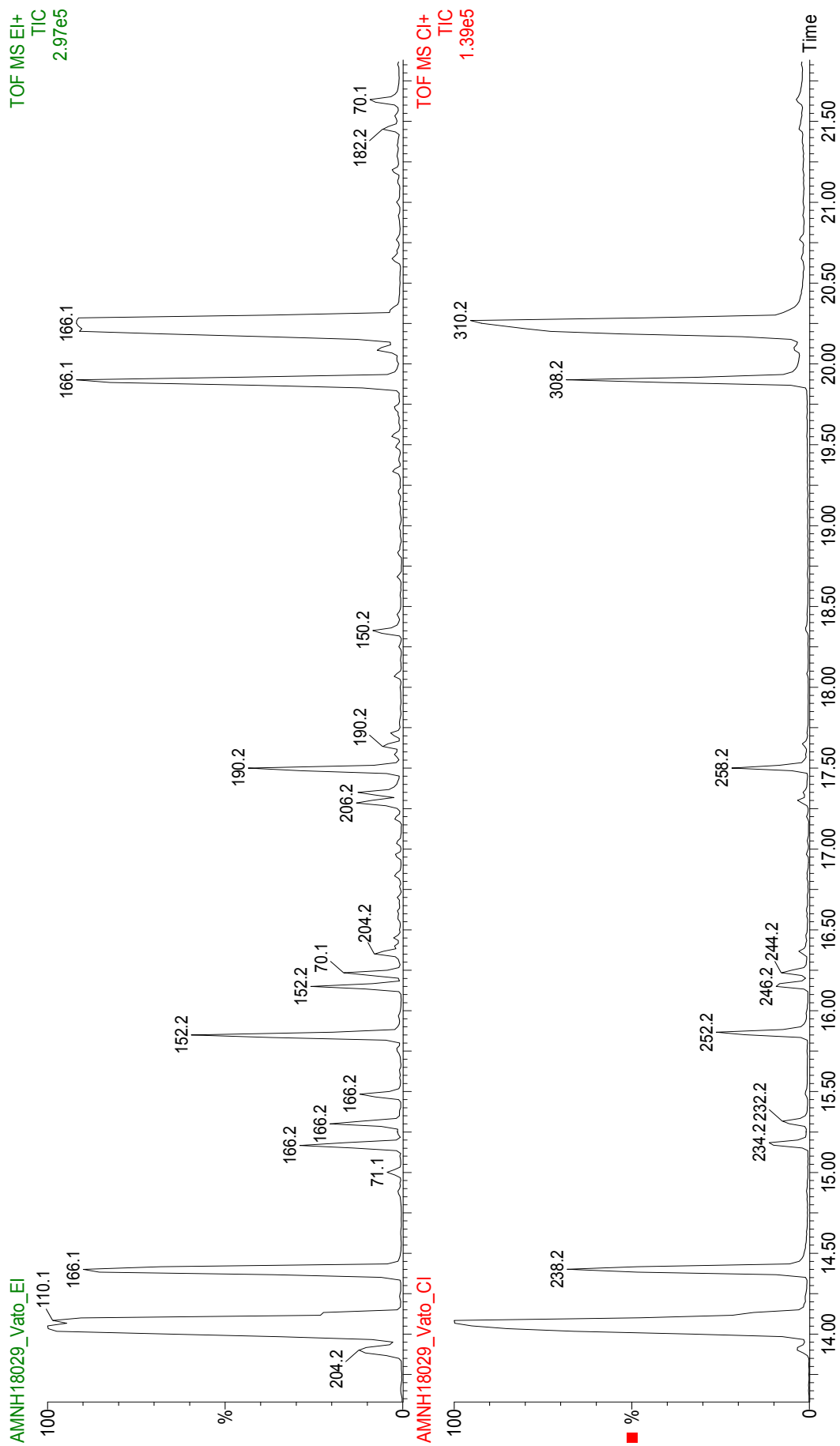
S15. *M. baroni* frogs from Vatoharanana (December 1989, 10 combined skins; provided by John W. Daly).
Major: 217A (14.00), 217B (14.10), 237A (14.42), 309A (20.23).
Minor: 233A (15.22), 231A (15.33), 245C (16.17), 243D (16.25), 291E (18.47), 307G (19.88), 309C (20.68).



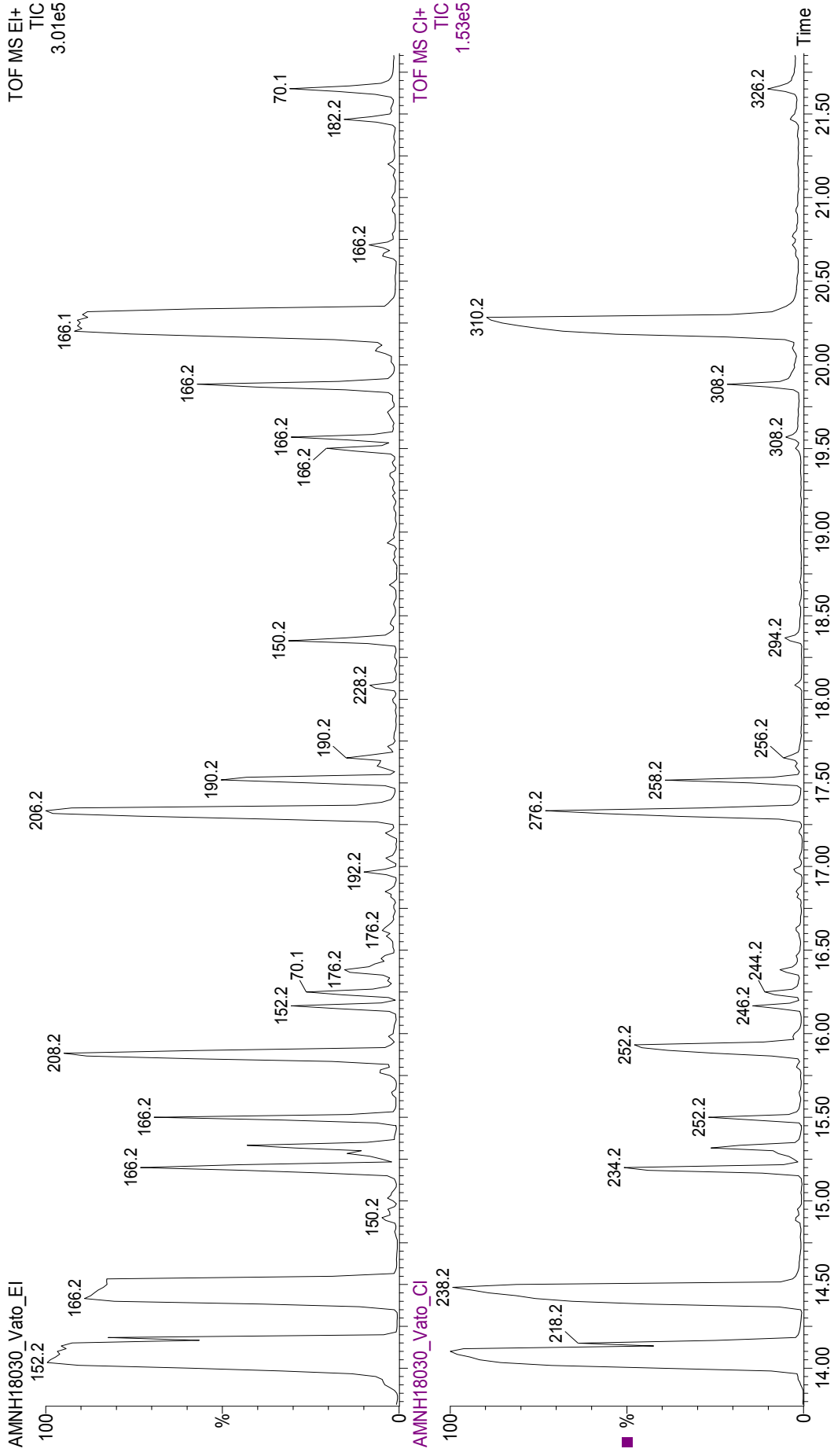
S16. *M. baroni* frog '87' from Vatoharanana (AMNH field #18028).

Major: 217A (14.05), 217B (14.10), 237A (14.42), 307G (19.88), 309A (20.23).

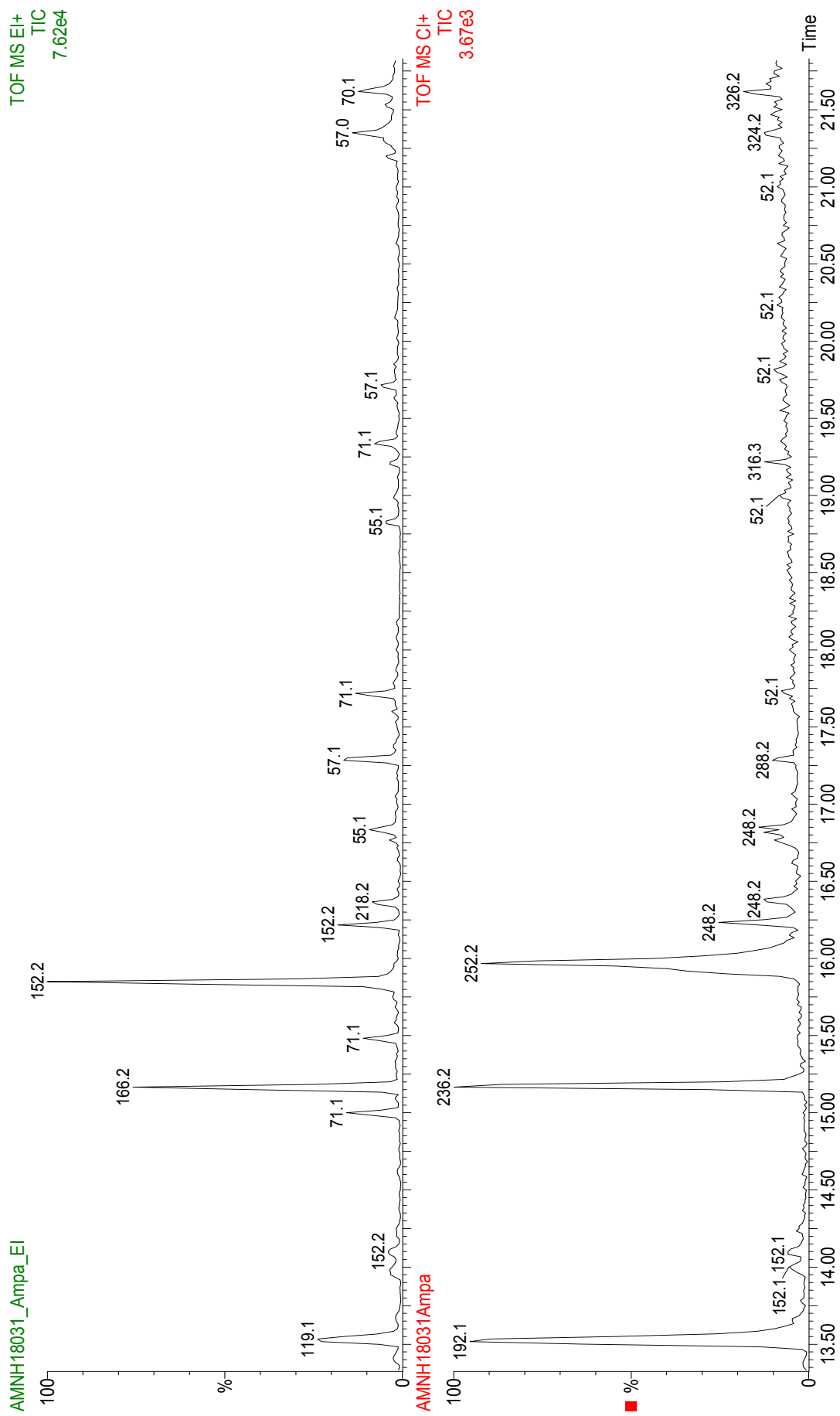
Minor: 233A (15.17), 231A (15.30), 251D (15.48), 251O (15.85), 245C (16.17), 243D (16.24), 275C (16.97), 275C' (17.32), 325A (21.64).



S17. *M. baroni* frog '88' from Vatoharanana (AMNH field # 18029).
Major: 217A (14.03), 217B (14.10), 237A (14.42).
Minor: 233A (15.17), 231A (15.30), 251D (15.48), 245C (16.15), 243D (16.23), 275C' (17.29), 257D (17.50), 307G (19.90), 309A (20.25), 325A (21.64).



S18. *M. baroni* frog '89' from Vatoharanana (AMNH field # 18030).
Major: 217A (14.03), 217B (14.18), 237A (14.42), 233A (15.20), 251D (15.50), 251O (15.88), 275C' (17.33).
Minor: 231A (15.33), 245C (16.17), 243D (16.25), 275C (16.97), 257D (17.52), 255B (17.65), 293D (18.35), 307F'' (19.50), 307F''' (19.57), 307G (19.88), 309A (20.20), 323B (21.47), 325A (21.65).

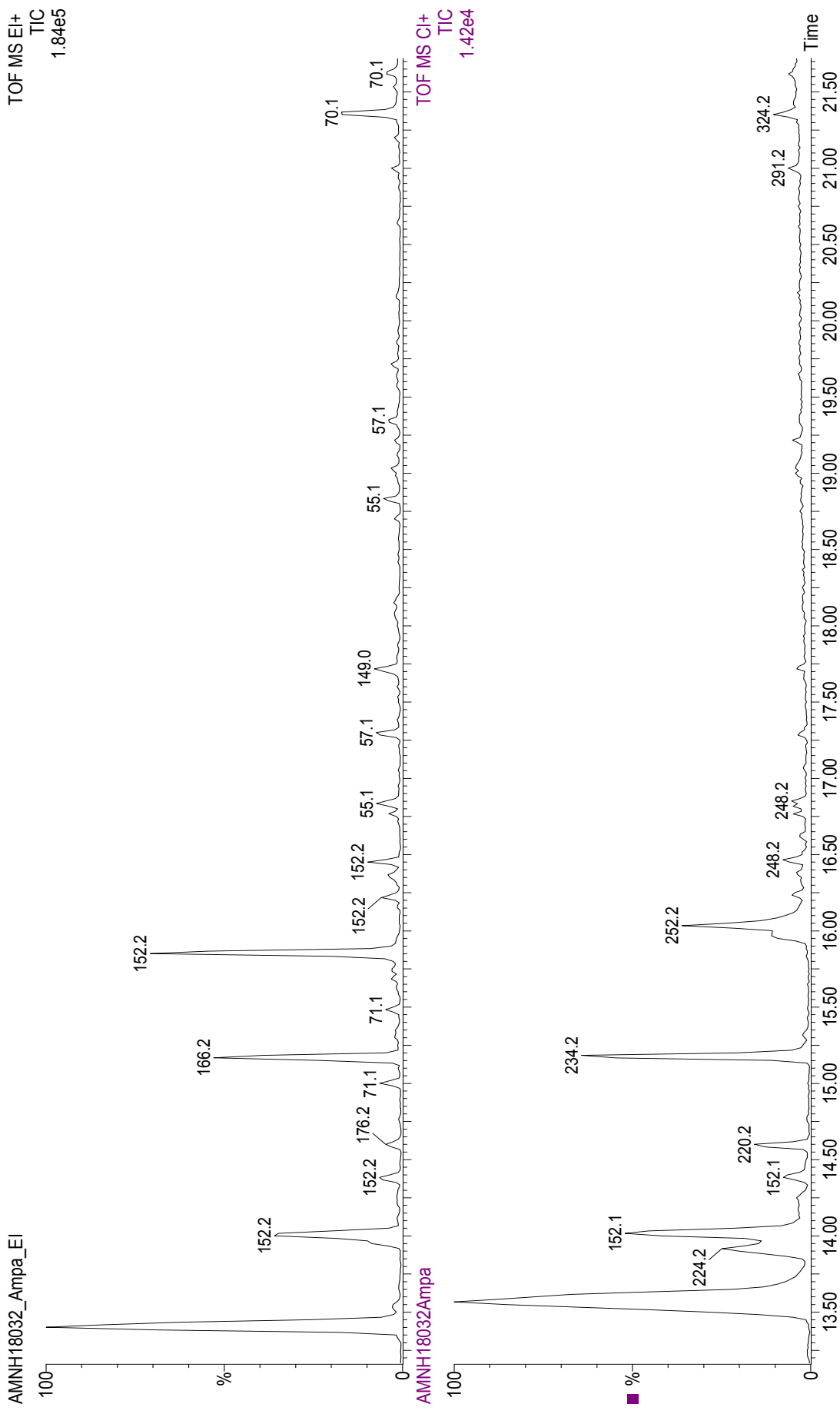


S19. *M. bernhardi* frog '90' from Ampasimpotsy (AMNH field # 18031).

Major: 233A (15.18), 251O (15.85).

Minor: 245C (16.23), 323B (21.35), 325A (21.62).

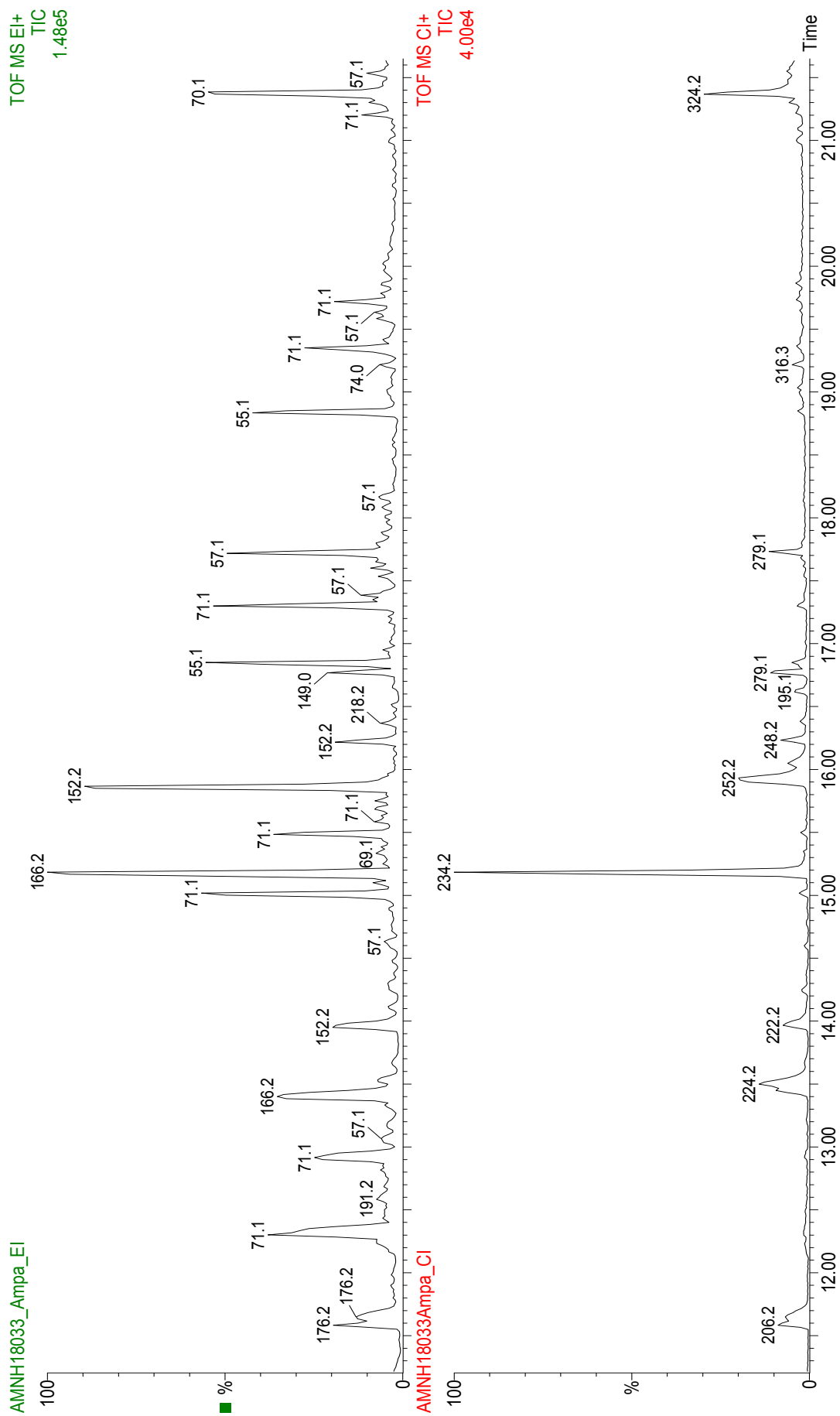
TOF MS EI+
TIC
1.84e5



S20. *M. bernhardi* frog '91' from Ampasimpotsy (AMNH field # 18032).

Major: 251O (15.85).

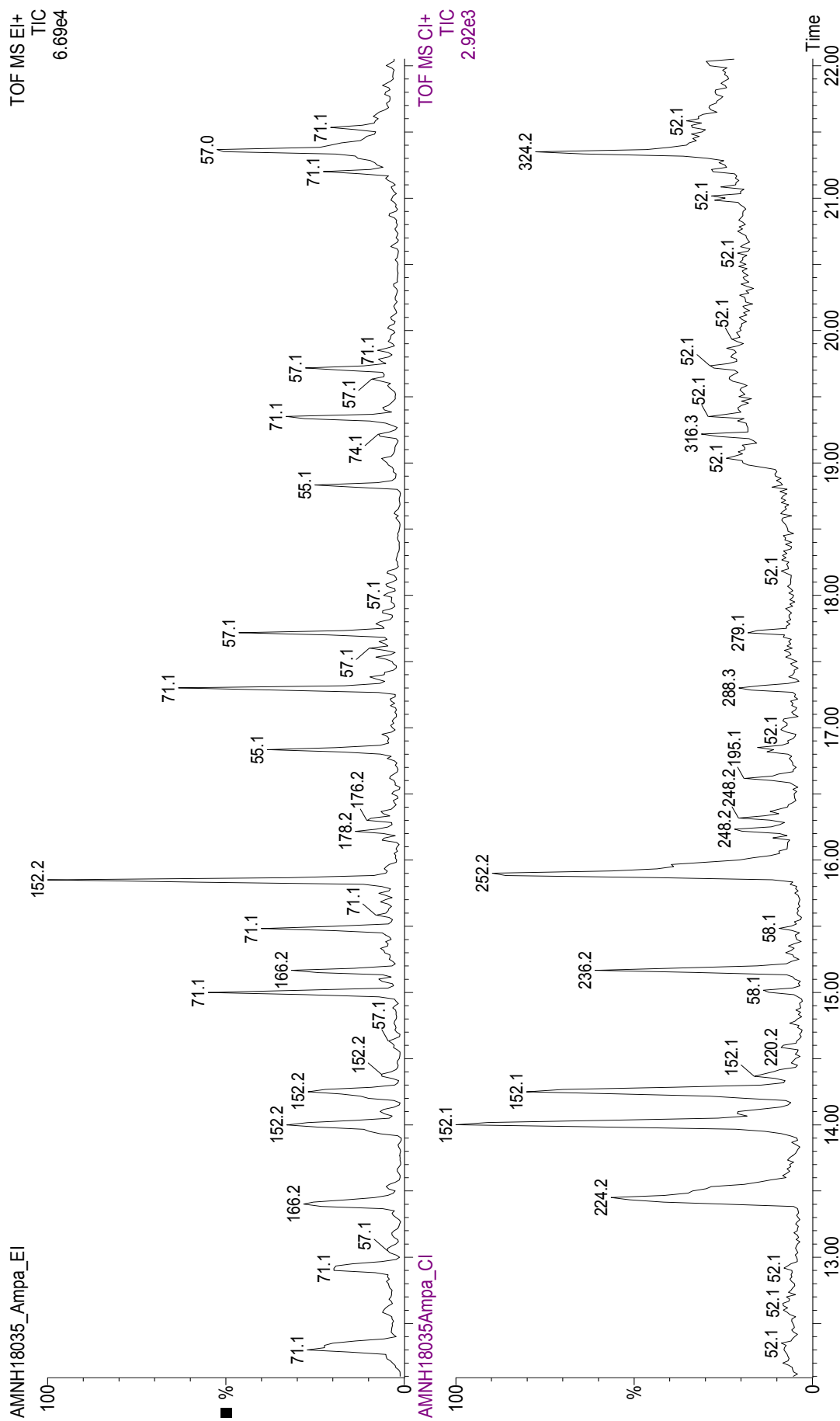
Minor: 223H" (13.98), 217A (14.00), 233A (15.17), 245C (16.23), 323B (21.34).



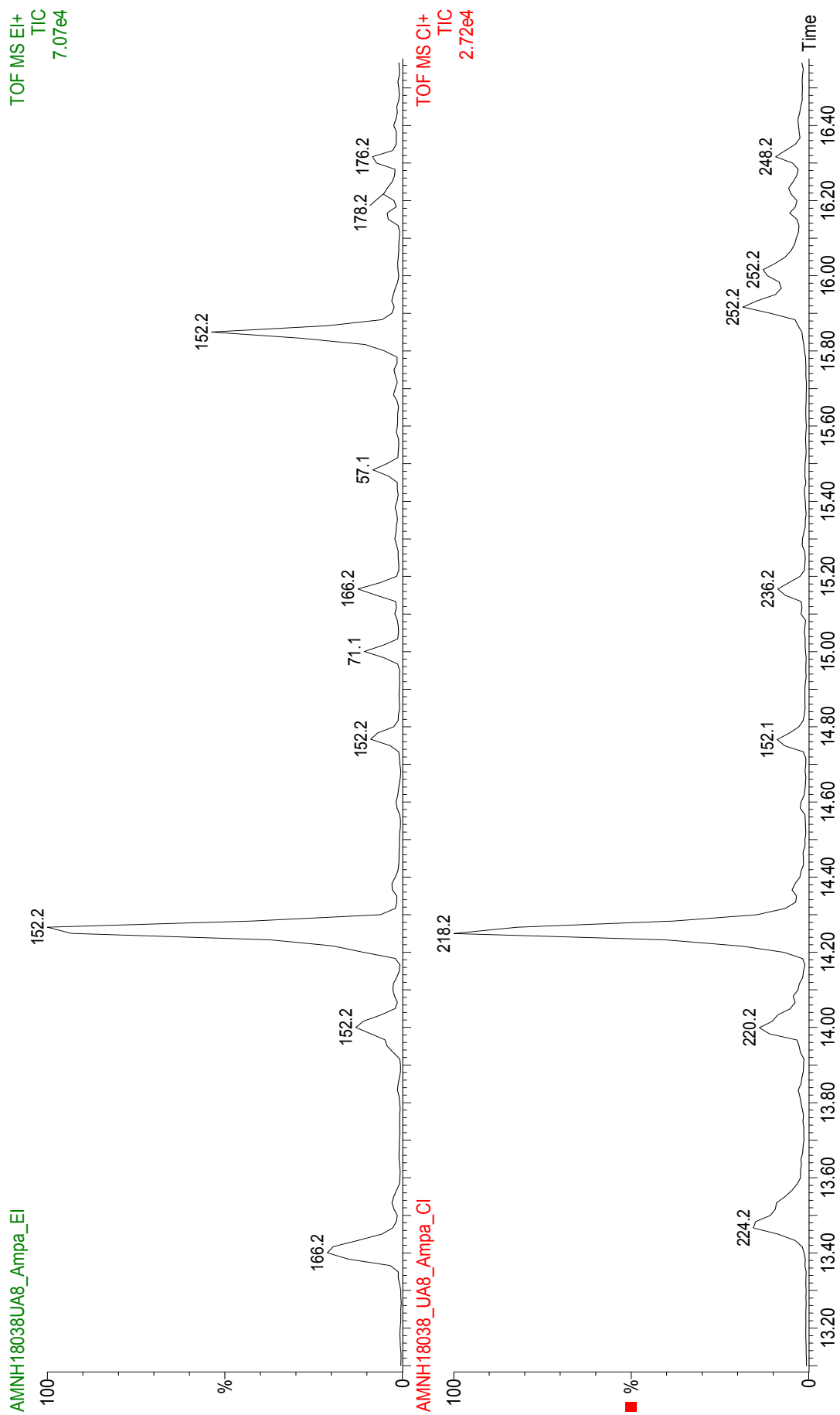
S21. *M. bernhardi* frog '92' from Ampasimpotsy (AMNH field # 18033).

Major: 233A (15.18), 251O (15.87).

Minor: 223B (13.53), 219F and 221I (13.95), 245C (16.23), 323B (21.39).



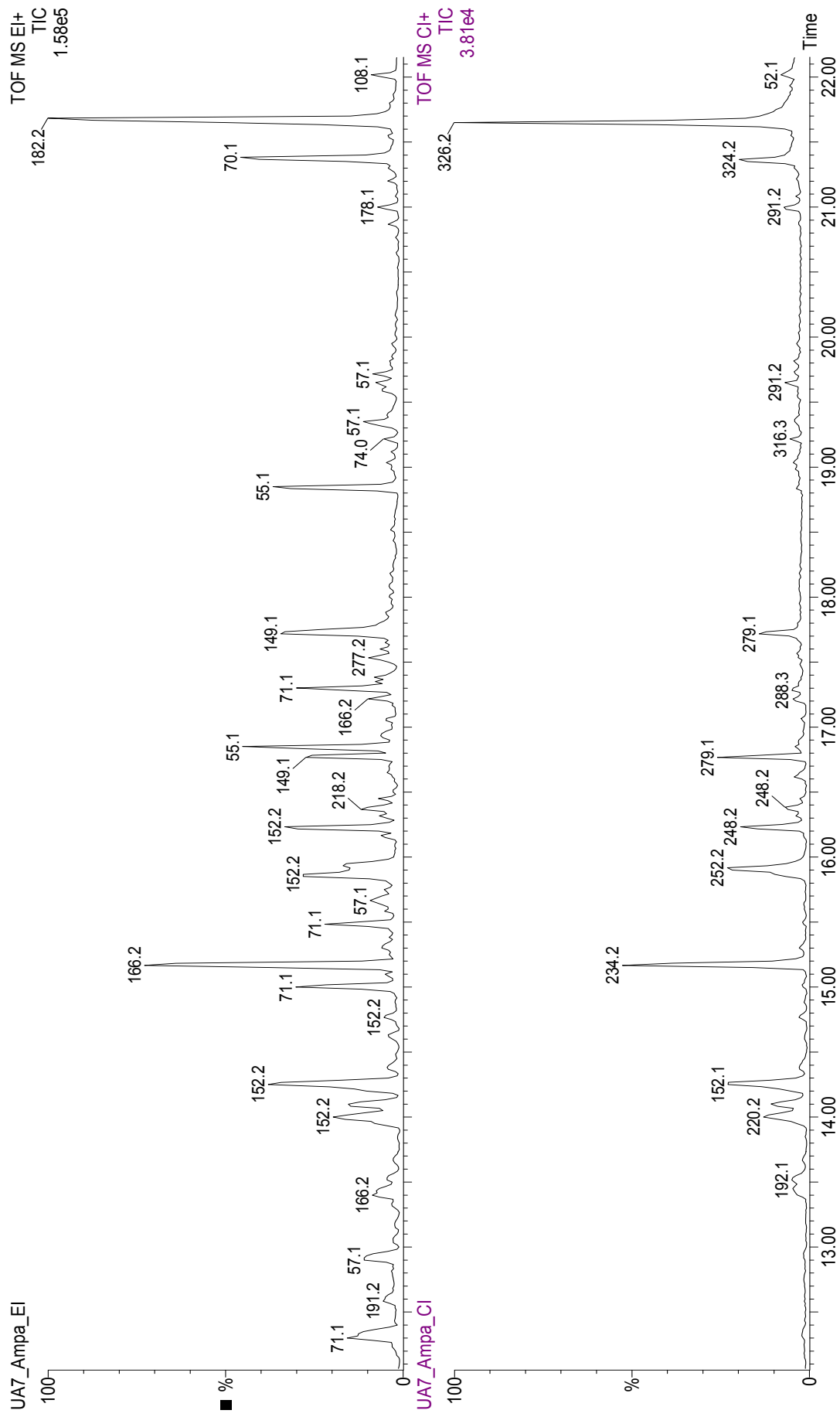
S22. *M. bernhardi* frog '93' from Ampasimpotsy (AMNH field # 18035).
Major: 251O (15.85).
Minor: 223B (13.40), 217A + 219F + 221I (14.00), 233A (15.17), 245B and 245C (16.22), 323B (21.37).



S23. *M. bernhardi* frog 'U8' from Ampasimpotsy (AMNH field # 18038, deposited at UADBA).

Major: 217B' (14.27).

Minor: 223B (13.40), 217A + 219F + 221I (14.00), 233A (15.17), 251O (15.85).



S24. *M. bernhardi* frog 'U7' from Ampasimpotsy

Major: 233A (15.17), 325A (21.68).

Minor: 217A + 219F + 221I (14.00), 217B (14.10), 217B' (14.25), 251O (15.85), 245B + 245C + 247E (16.23), 323B (21.38).