Supplementary Materials

Sacha inchi (*Plukenetia volubilis* L.) shell extract alleviates hypertension in association with regulation of gut microbiota

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Short title: Sacha inchi shell extract prevents hypertension

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Online supplementary Figures

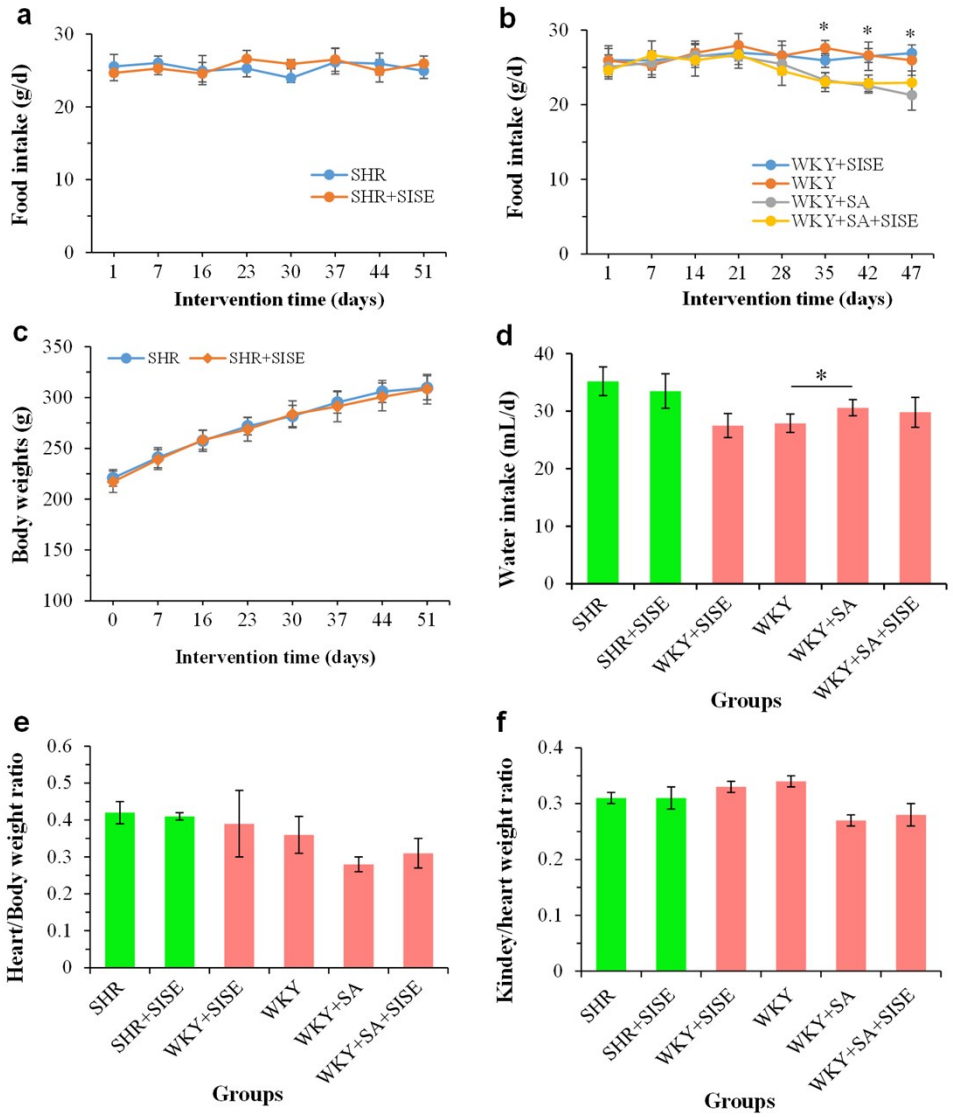


Fig. S1. Effects of SISE intervention on food intake in SHR rats (A) and high salt diet WKY rats (B); Effects of SISE intervention on body weights in SHR rats (C); Effects of SISE intervention on water intake (D), the ratio of heart/body weight (E) and kidney/body weight (F) in SHR and high-salt diet WKY rats.

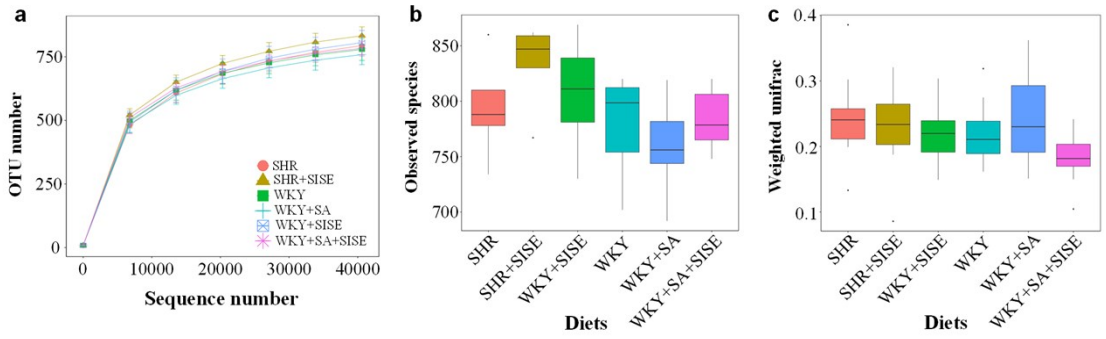


Fig. S2. The rarefaction curves approached the saturation plateau (A); SISE intervention did not significantly alter the observed species (B) and weighted unifrac (C), indicating SISE intervention did not affect the α and β diversity in SHR and high-salt diet WKY rats.

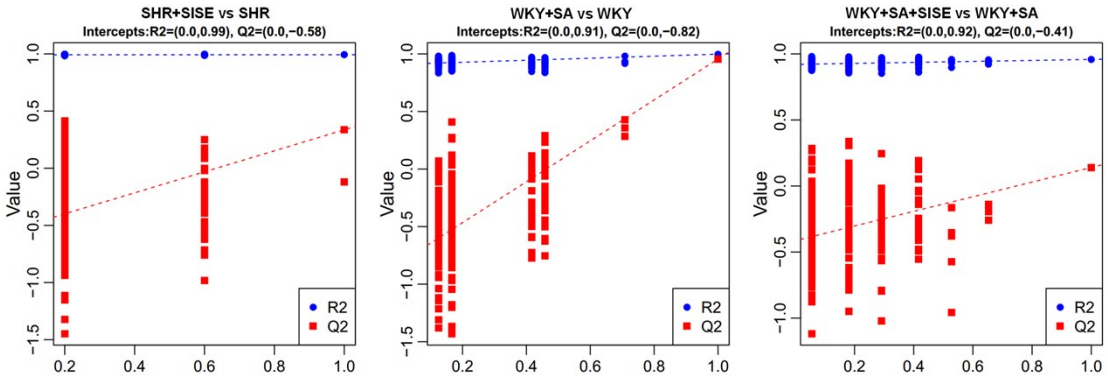


Fig. S3. Validation of PLS-DA model based on faecal metabolic profiles, indicating no overfitting phenomenon between each comparisons.

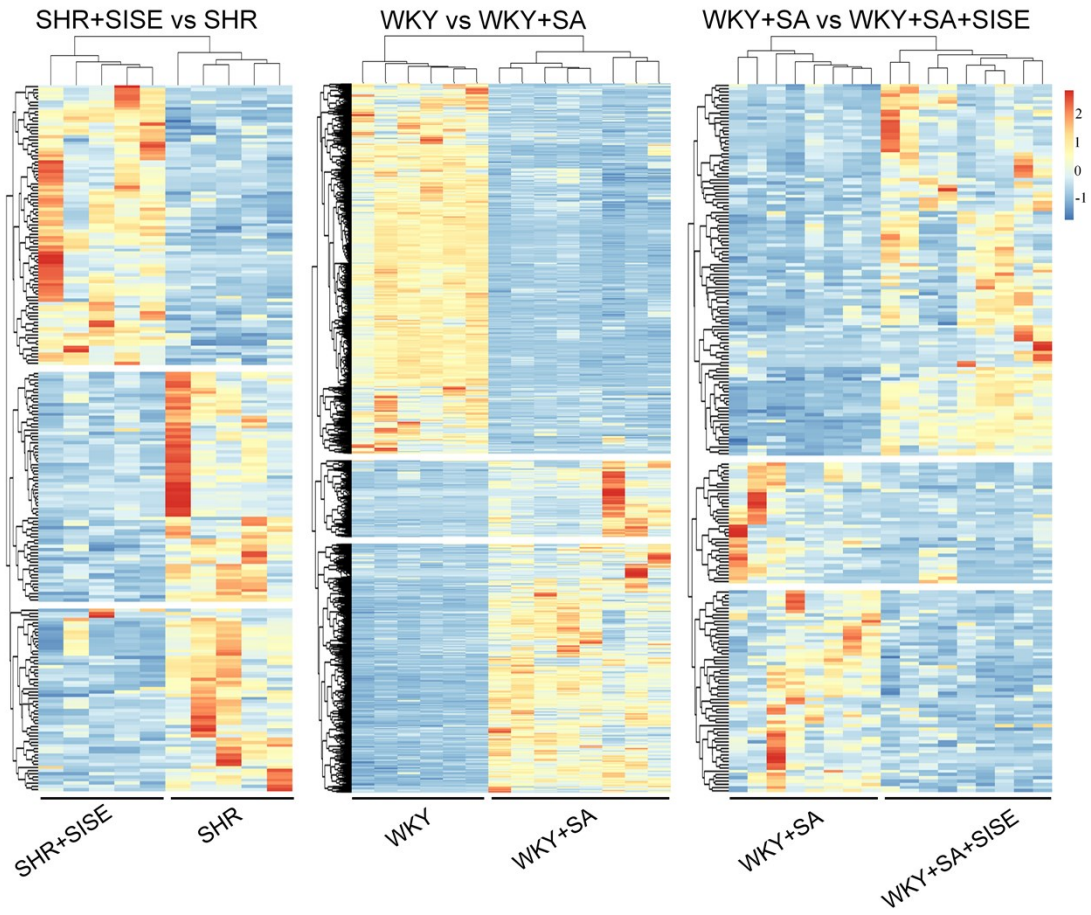


Fig. S4. A heatmap of total detected differentially metabolites in each treatments, further revealing SISE intervention alters the gut microbiota metabolome in SHR and high-salt diet WKY rats.

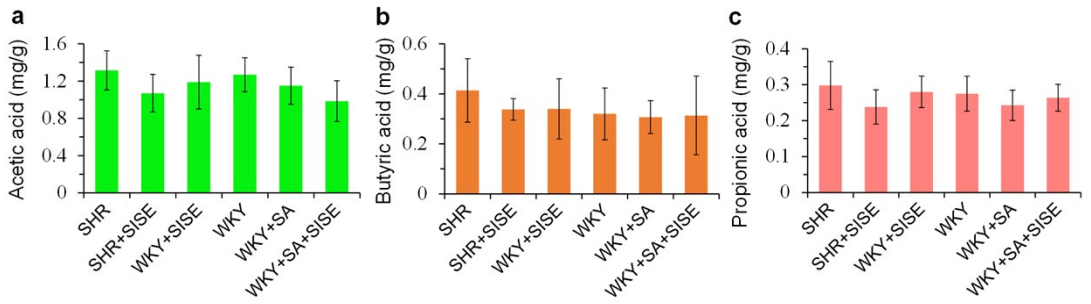


Fig. S5. SISE intervention did not significantly affect the levels of acetic acid (A), butyric acid (B), and propionic acid (C) in feces. The short-chain fatty acids were extracted as previously described, [1] and determined by the GC-MS Agilent 6890 N GC coupled to Agilent 5973 N Mass Selective Detector, with the column DB-17HT (30 m × 0.25 mm ID, 0.15 mm film).

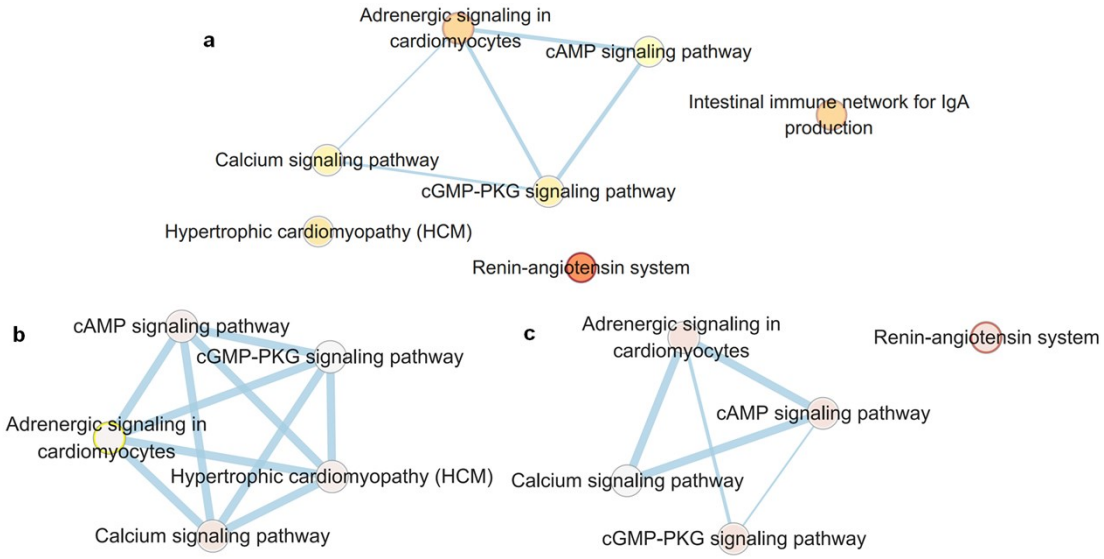
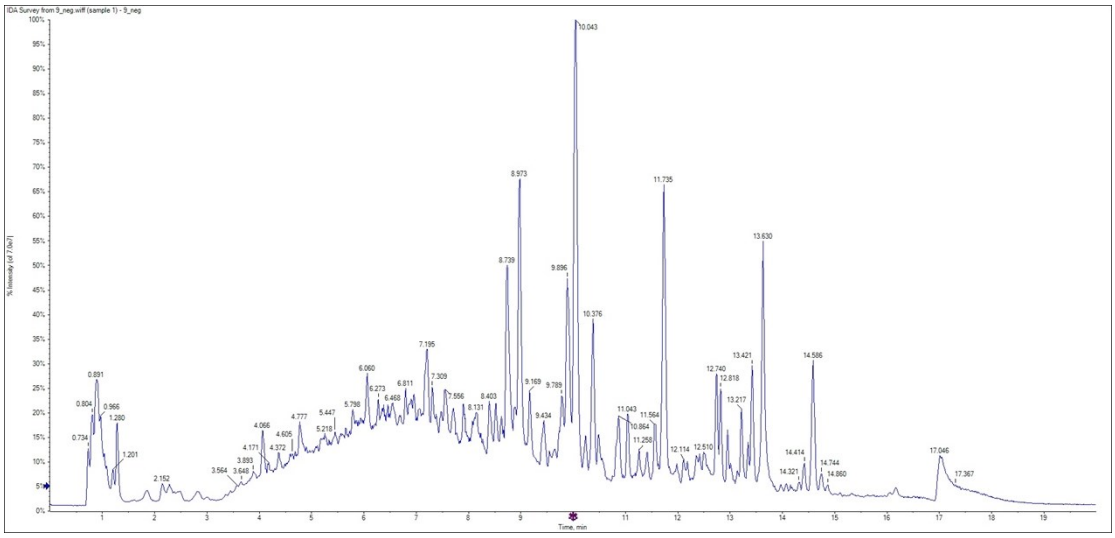


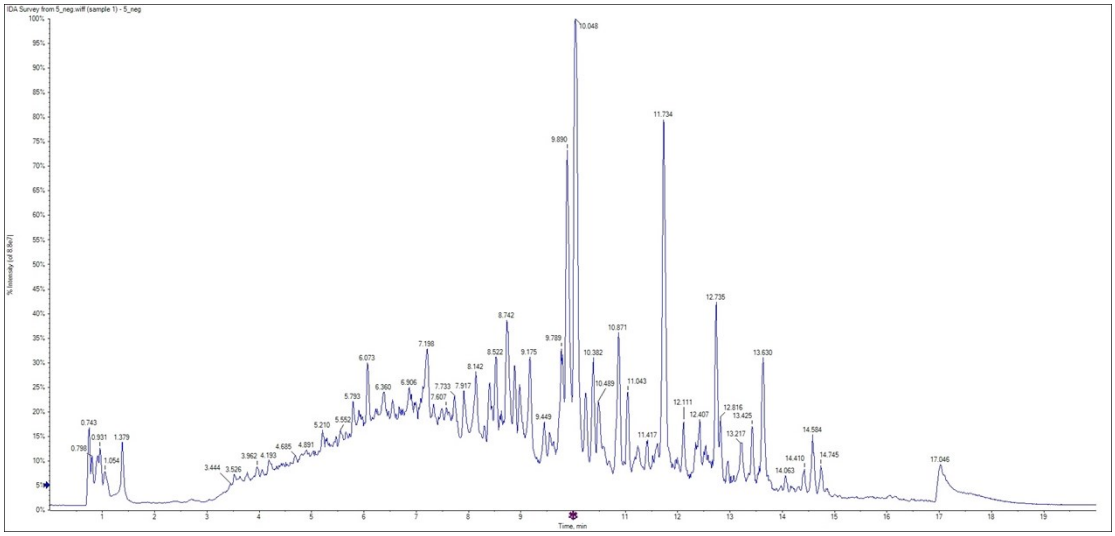
Fig. S6. Enrichment map highlighting major pathway upregulated or downregulated in the kidney of high-salt diet WKY rats (A), high-salt diet WKY rats with SISE intervention (B), and SHR rats with SISE intervention (C).

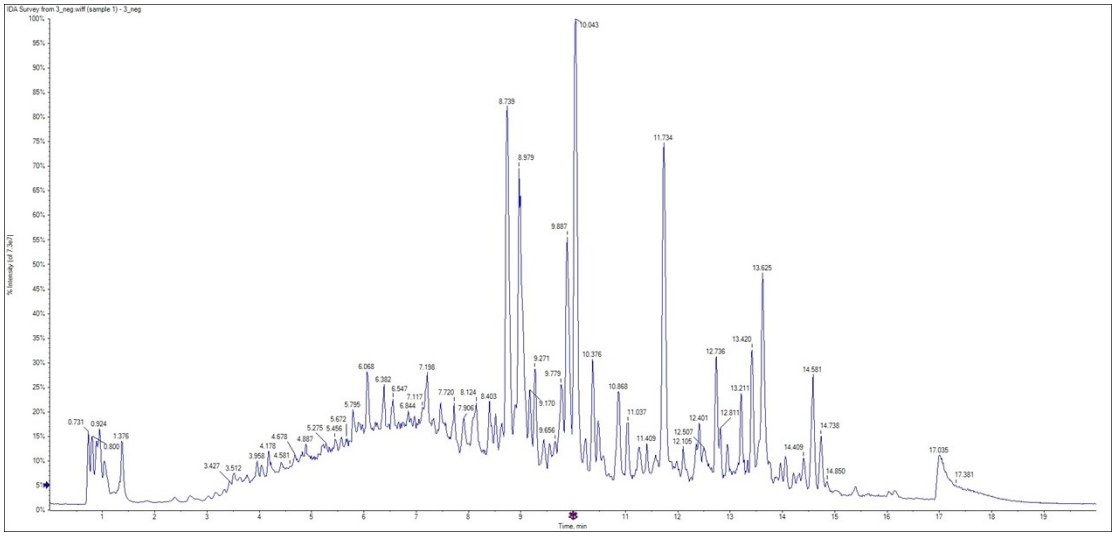
References

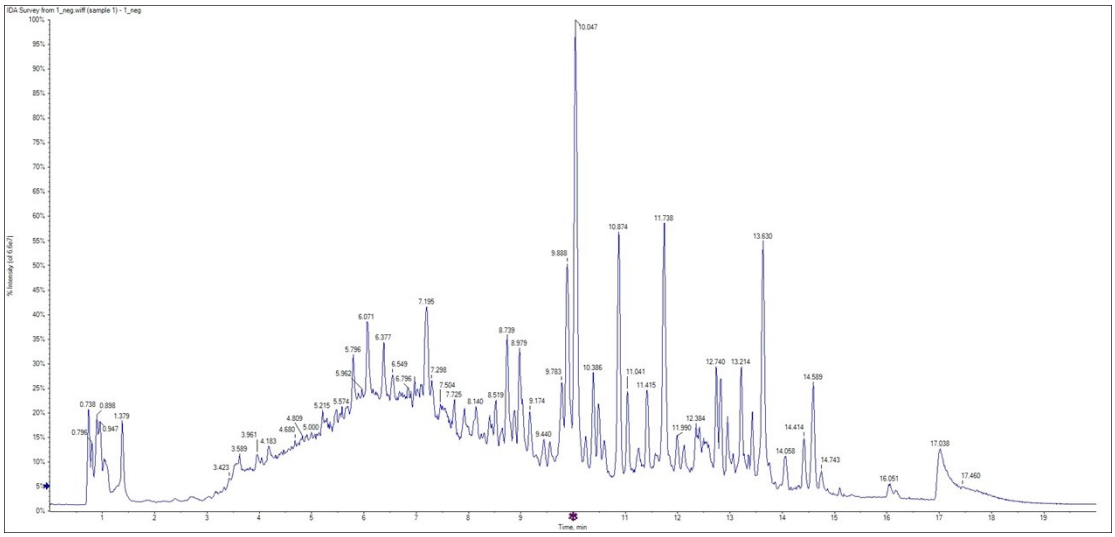
1 P. M. Miranda, G. D. Palma, V. Serkis, J. Lu, M. P. Louis-Auguste, J. L. Mccarville, E. F. Verdu, S. M. Collins and P. Bercik, High salt diet exacerbates colitis in mice by decreasing *Lactobacillus* levels and butyrate production, *Microbiome*, 2018, **6**, 57.

SHR groups (n=5): ES− modes of rats in SHR groups





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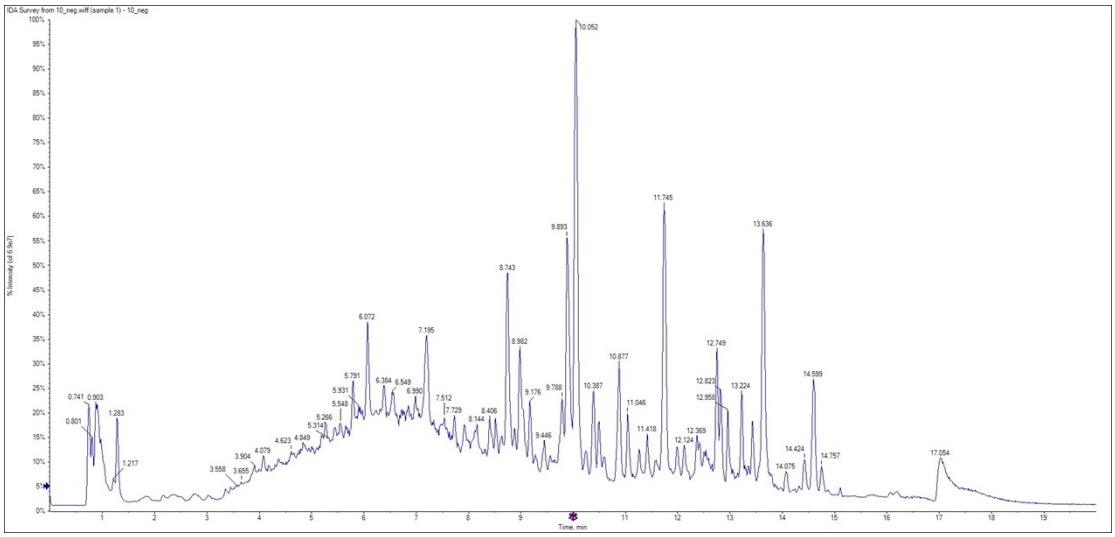
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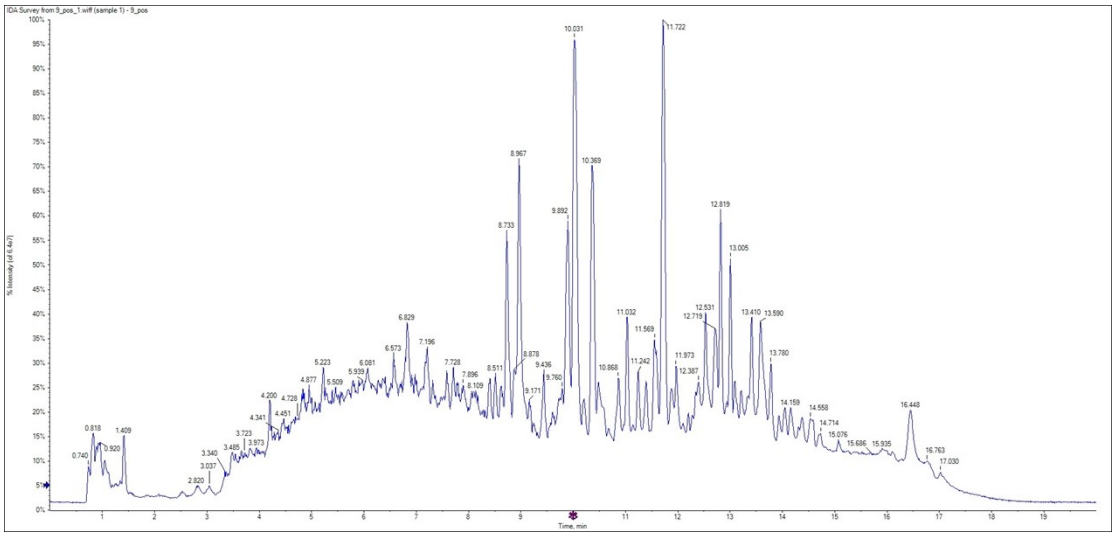
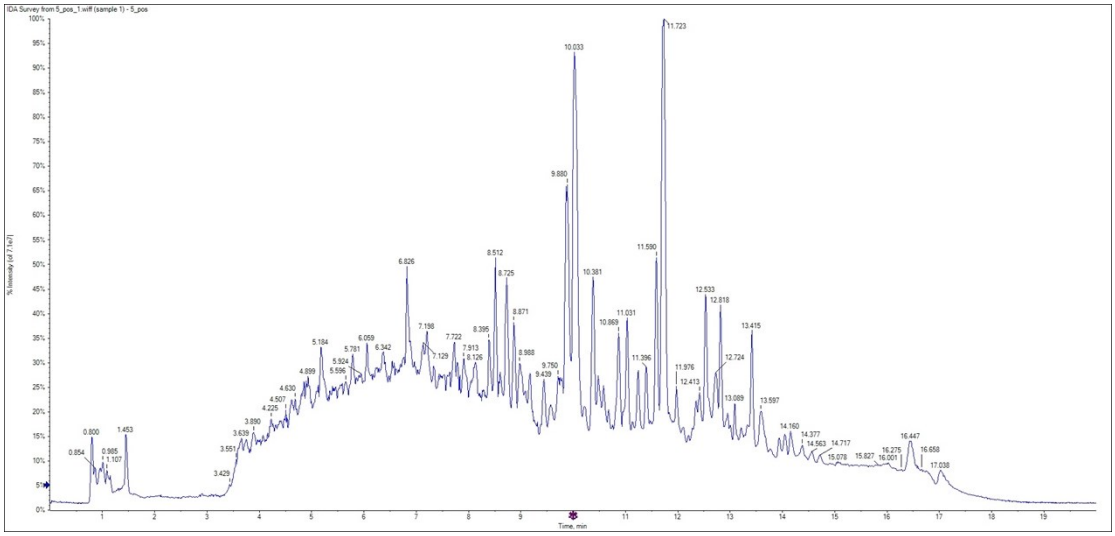
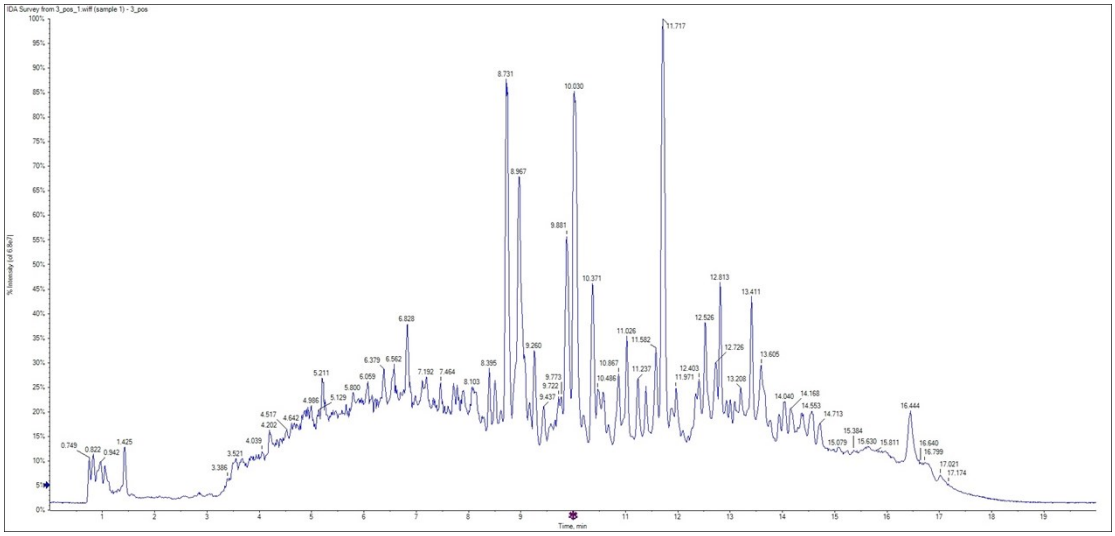
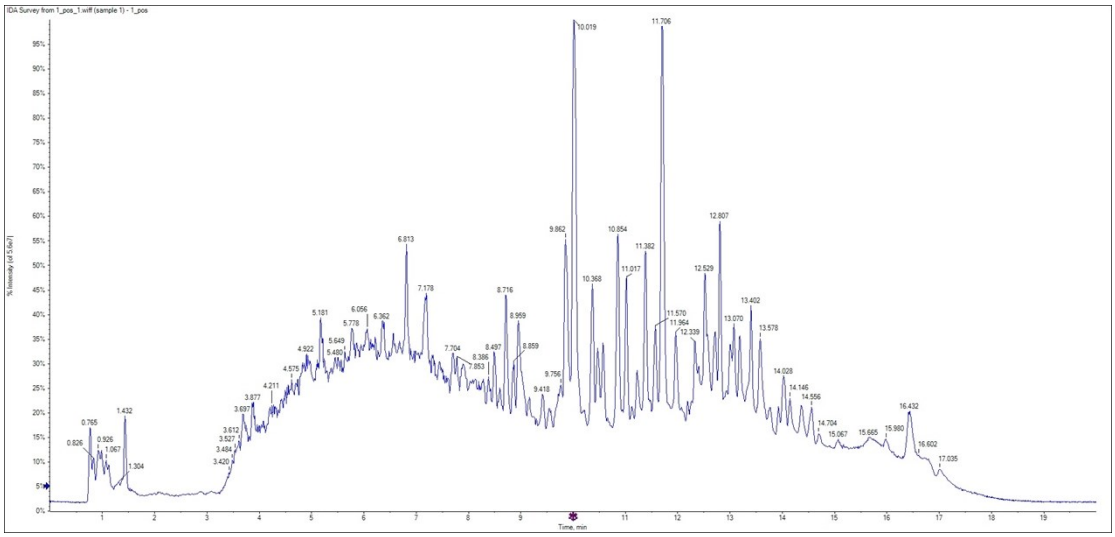
SHR groups (n=5): ES+ modes of rats in SHR groups





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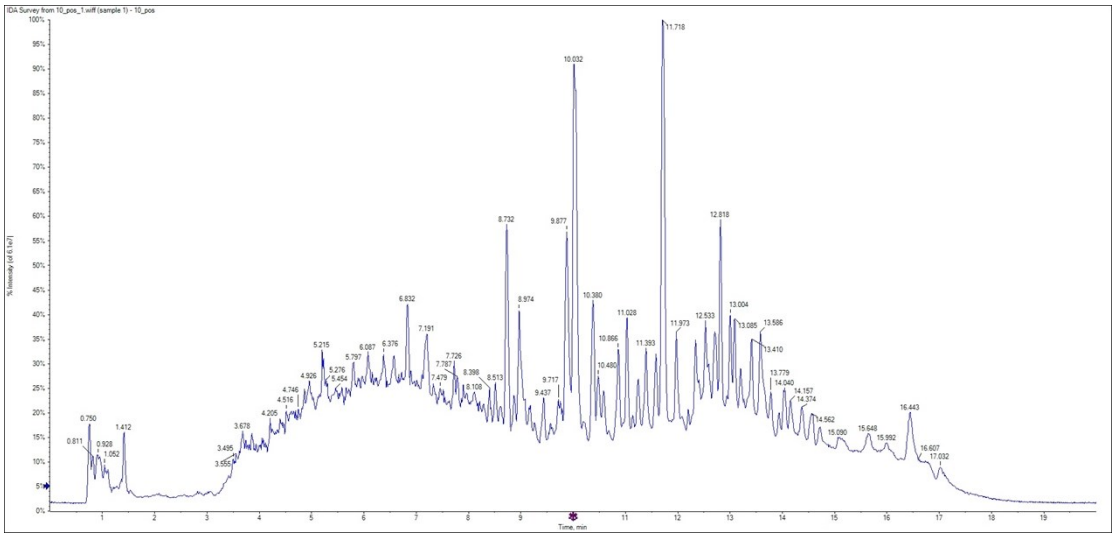
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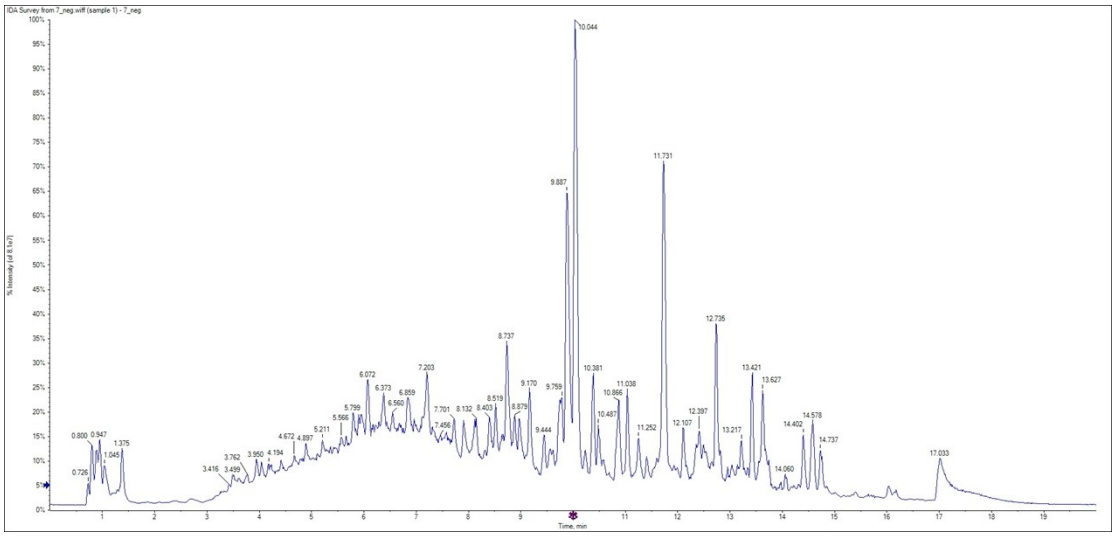
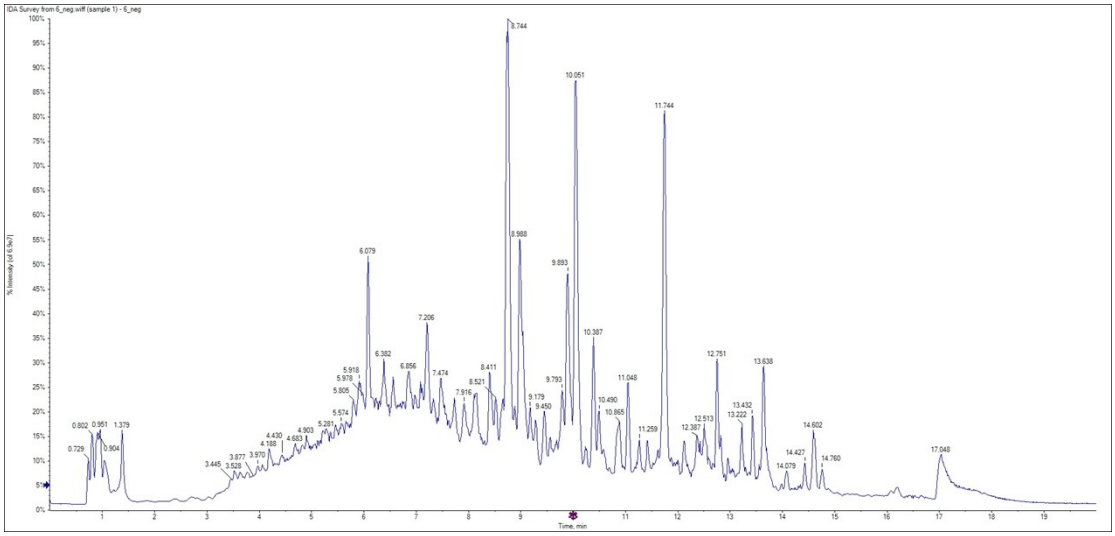
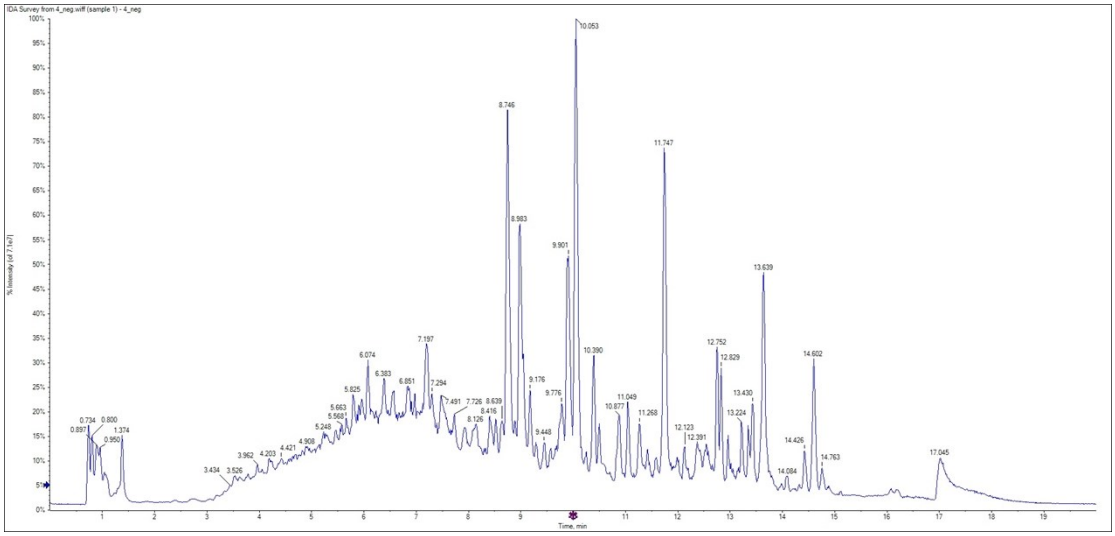
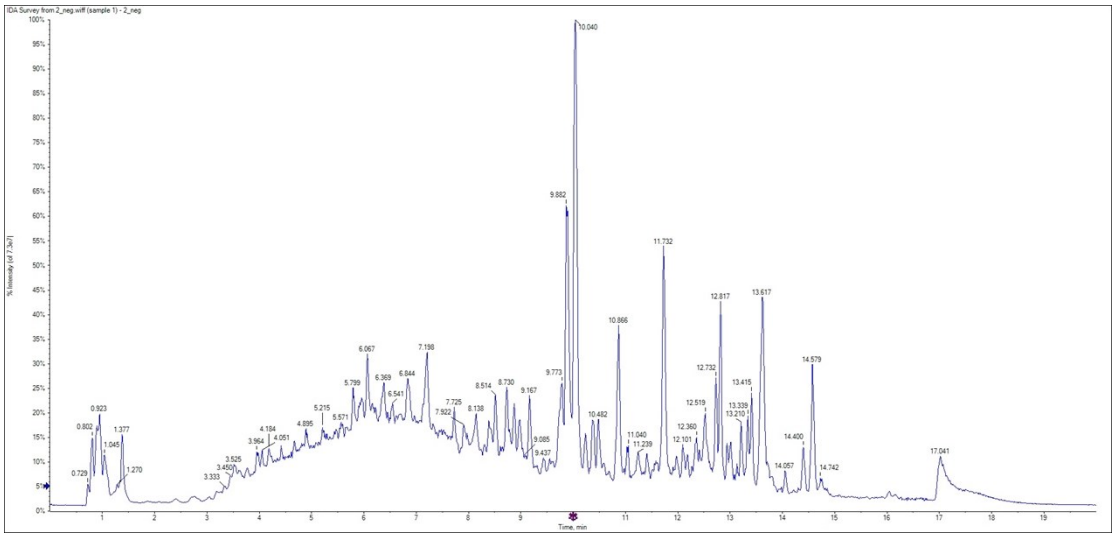
SHR+SISE groups (n=5): ES− modes of rats in SHR+SISE groups





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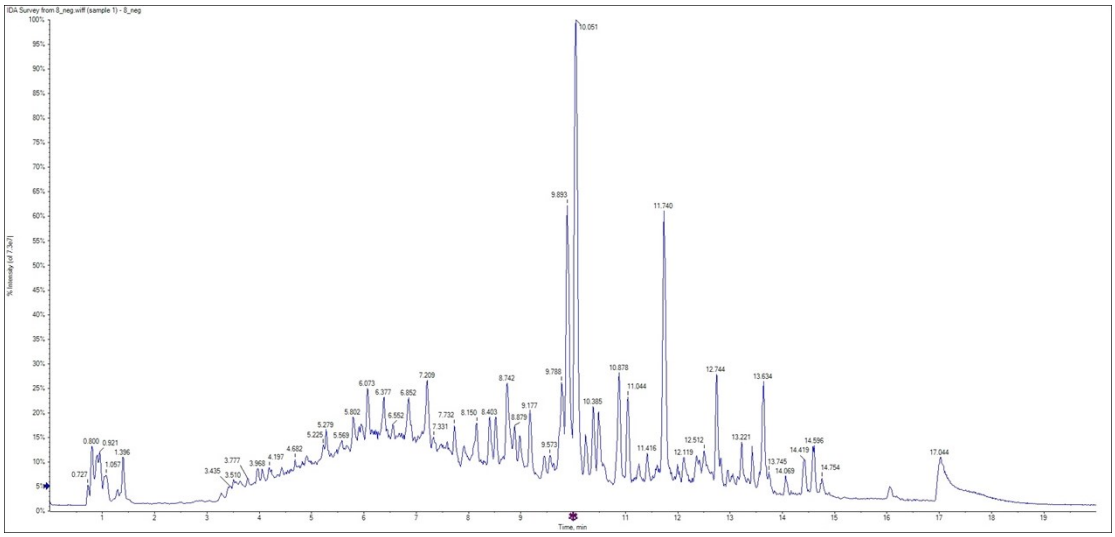
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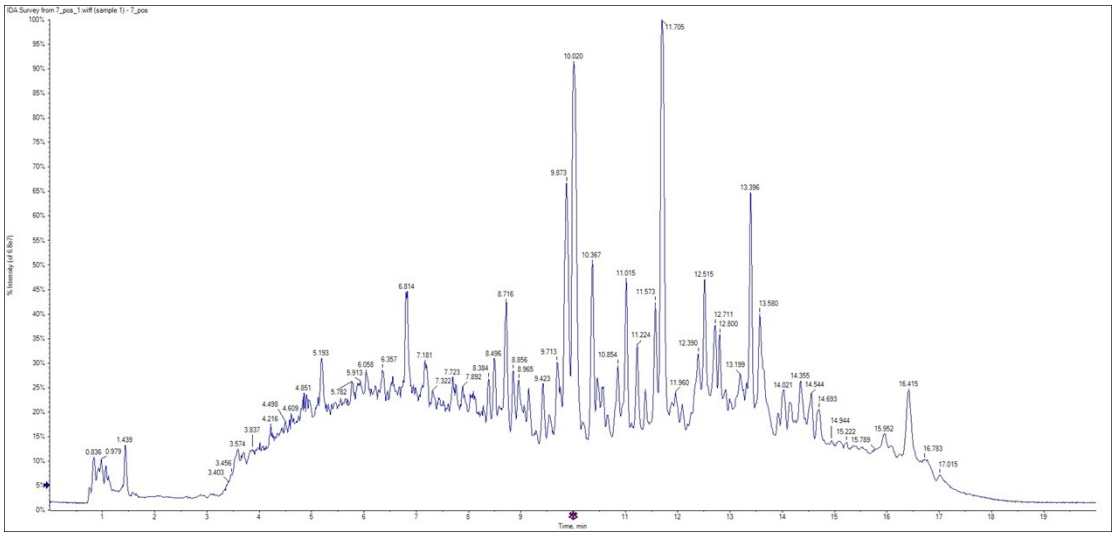
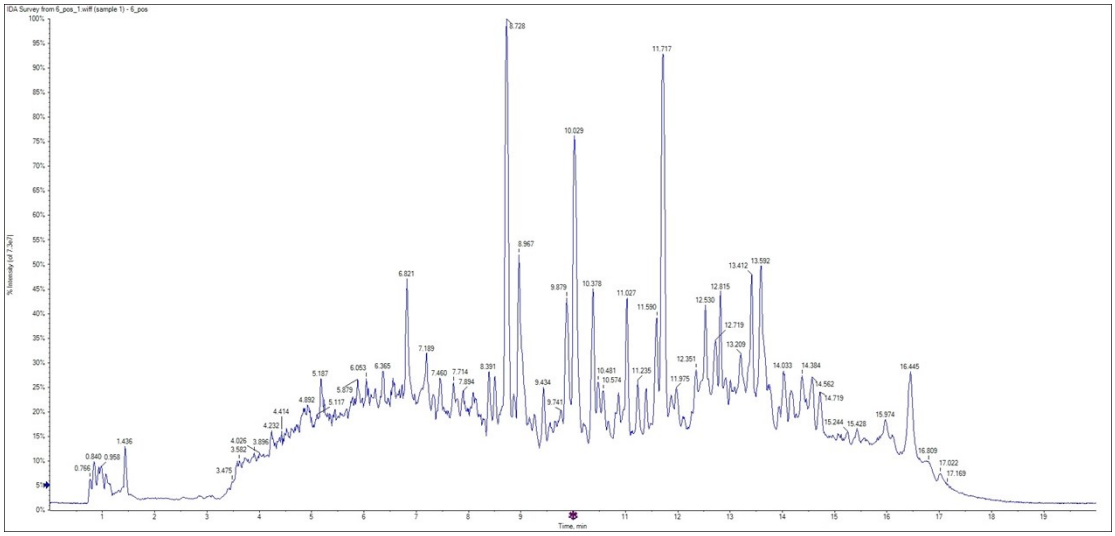
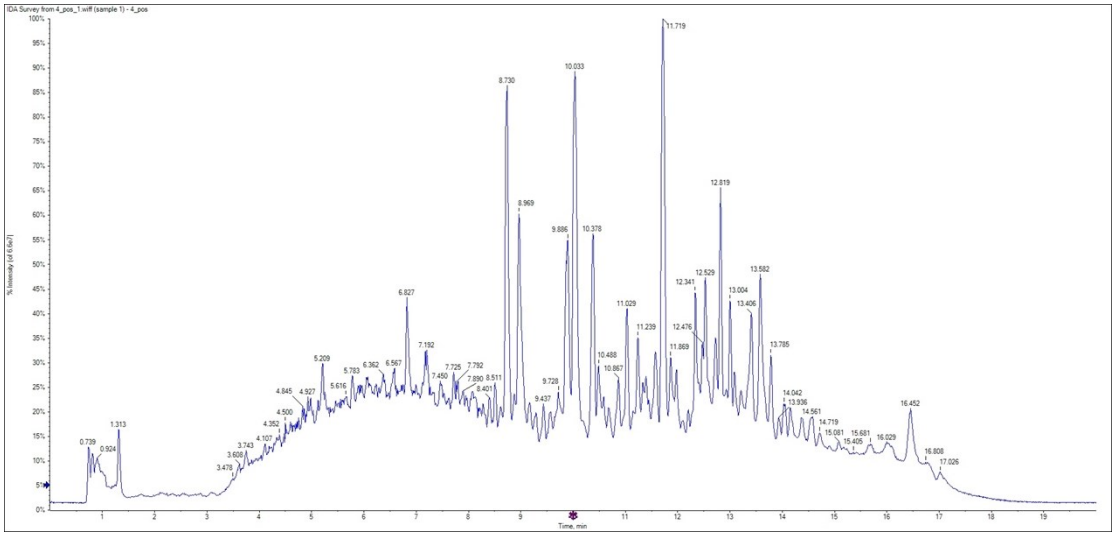
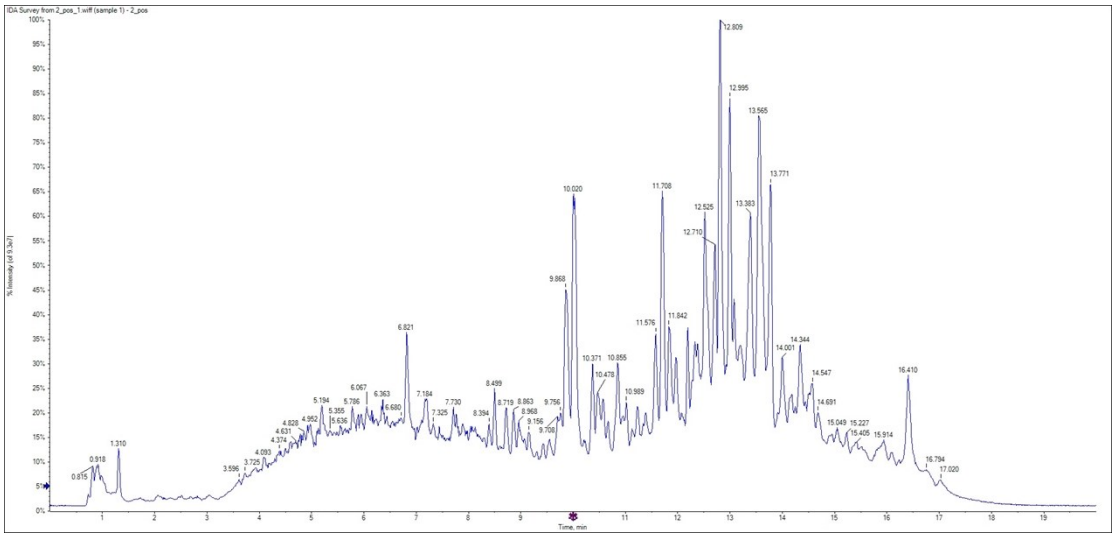
7.209
17.044

SHR+SISE groups (n=5): ES+ modes of rats in SHR+SISE groups





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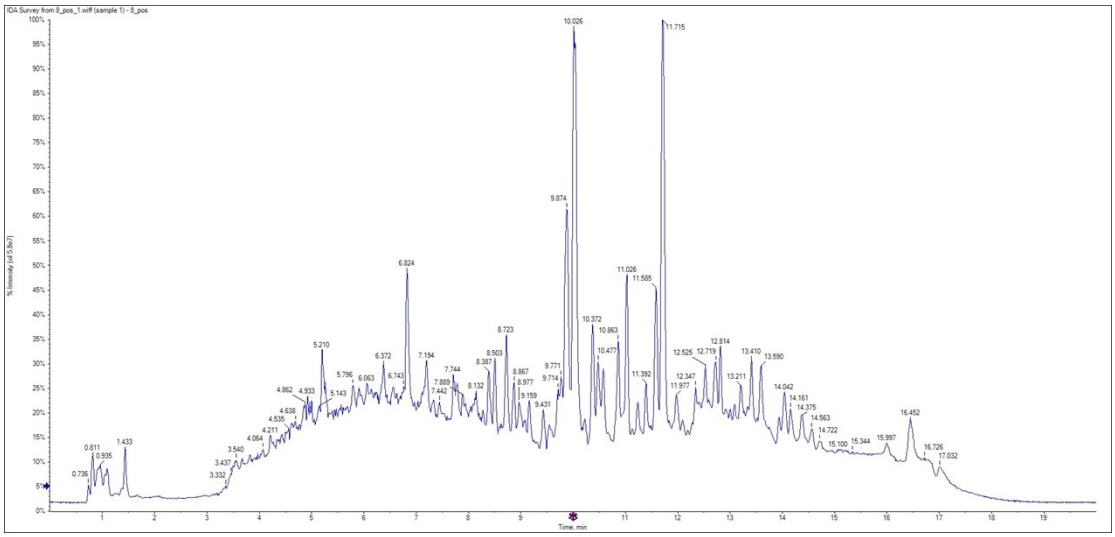
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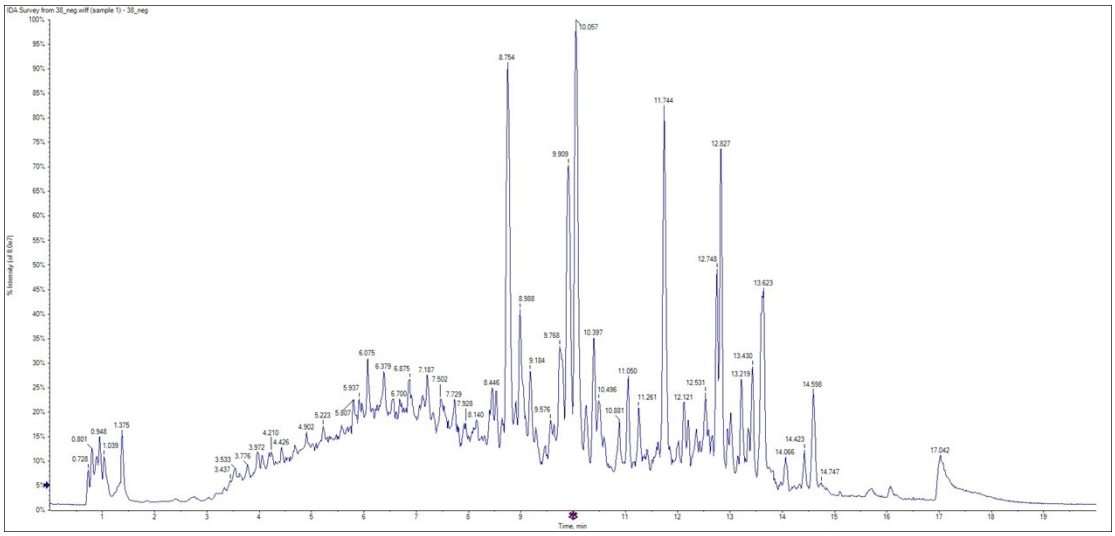
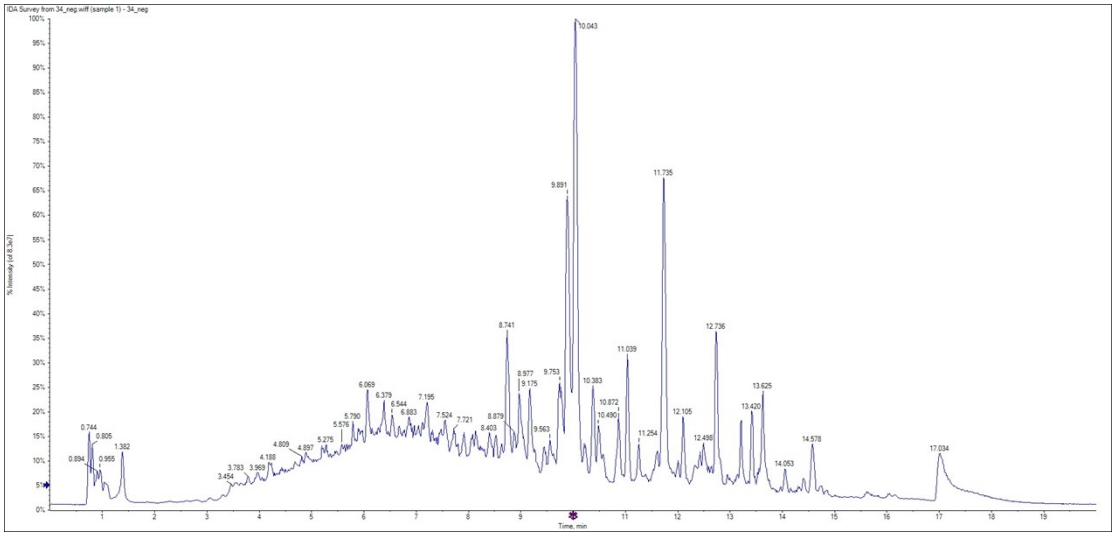
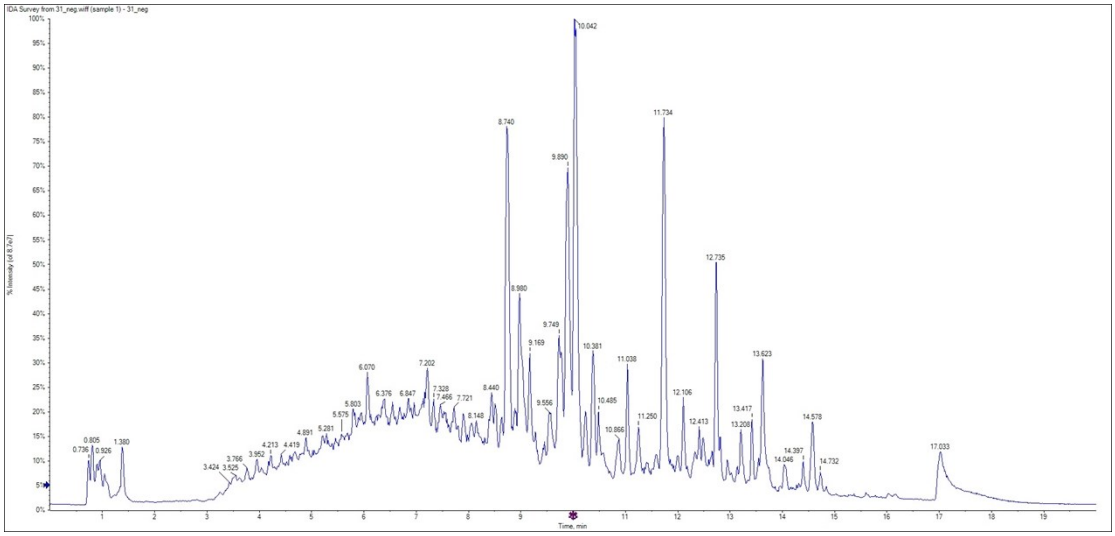
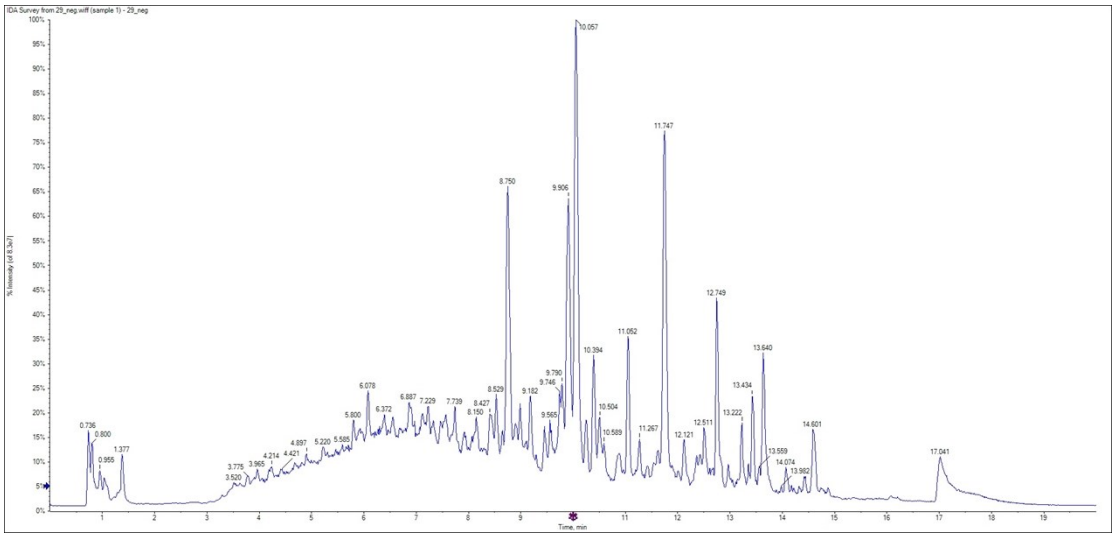
WKY groups (n=6): ES− modes of rats in WKY groups





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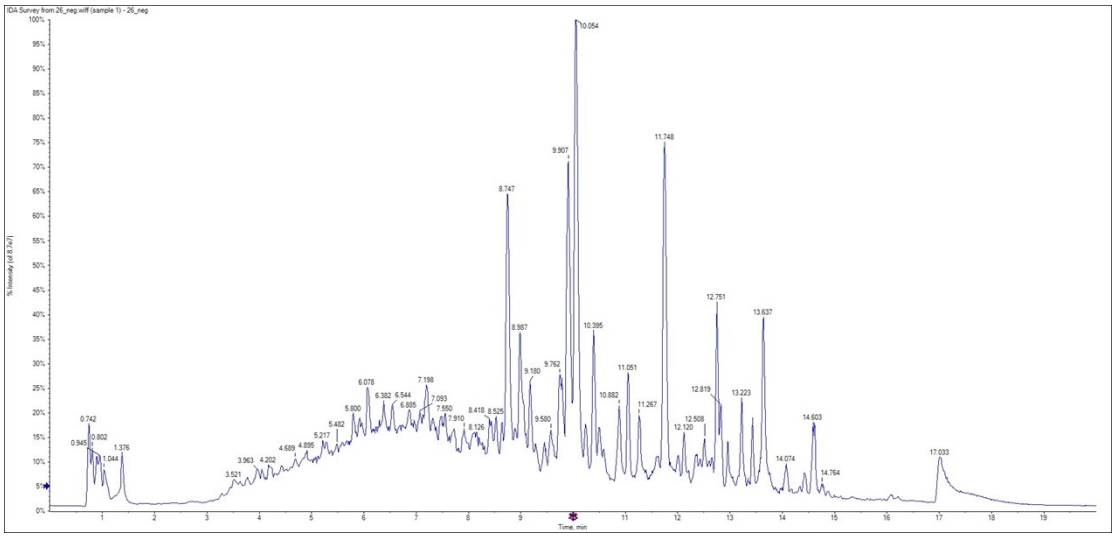
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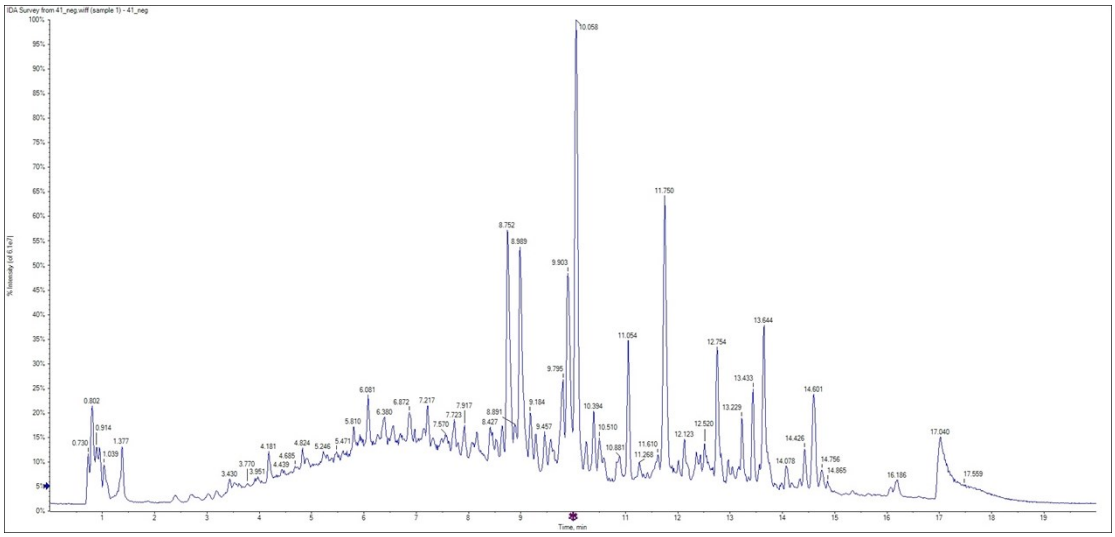
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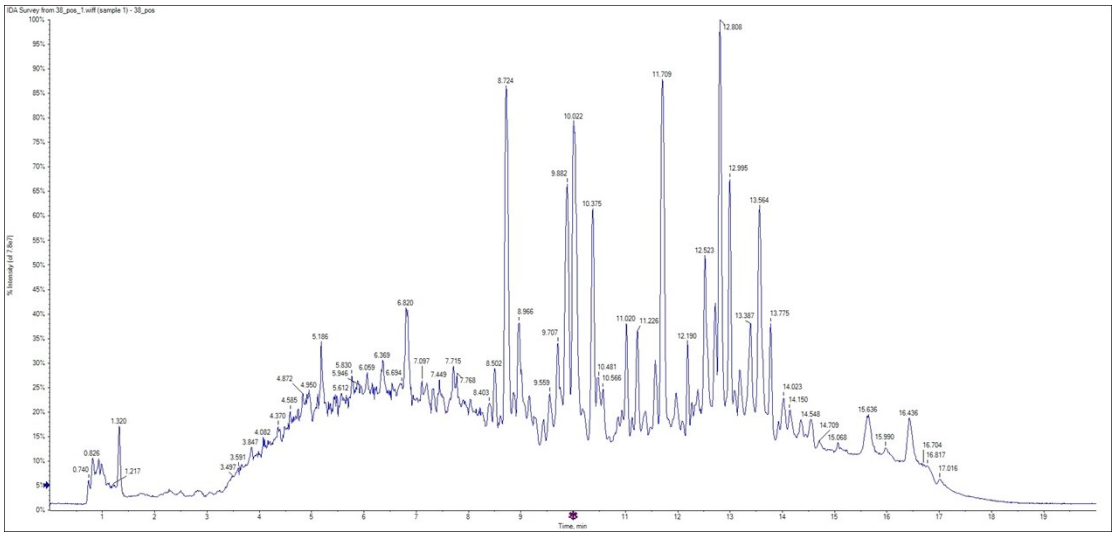
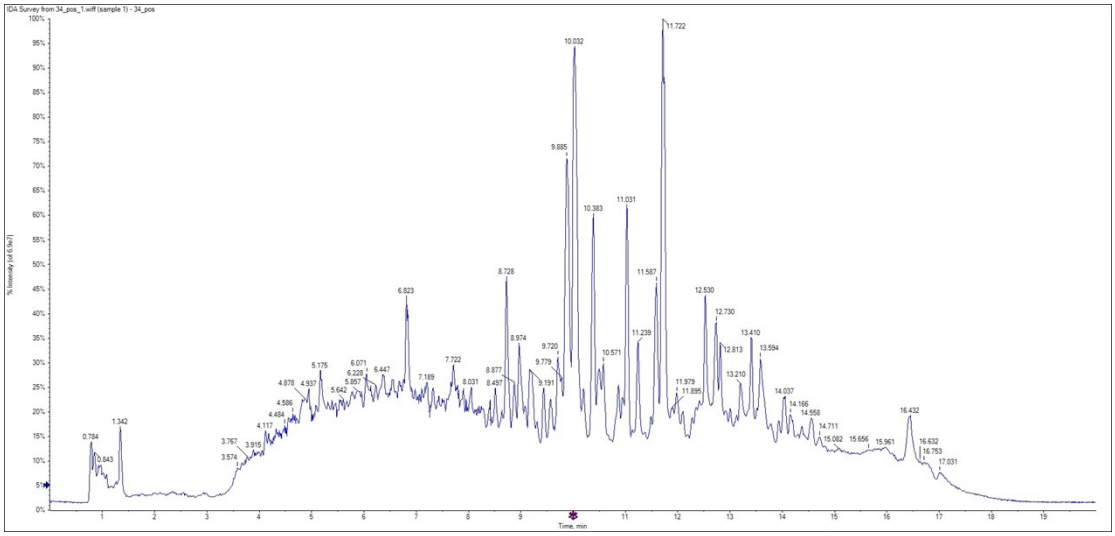
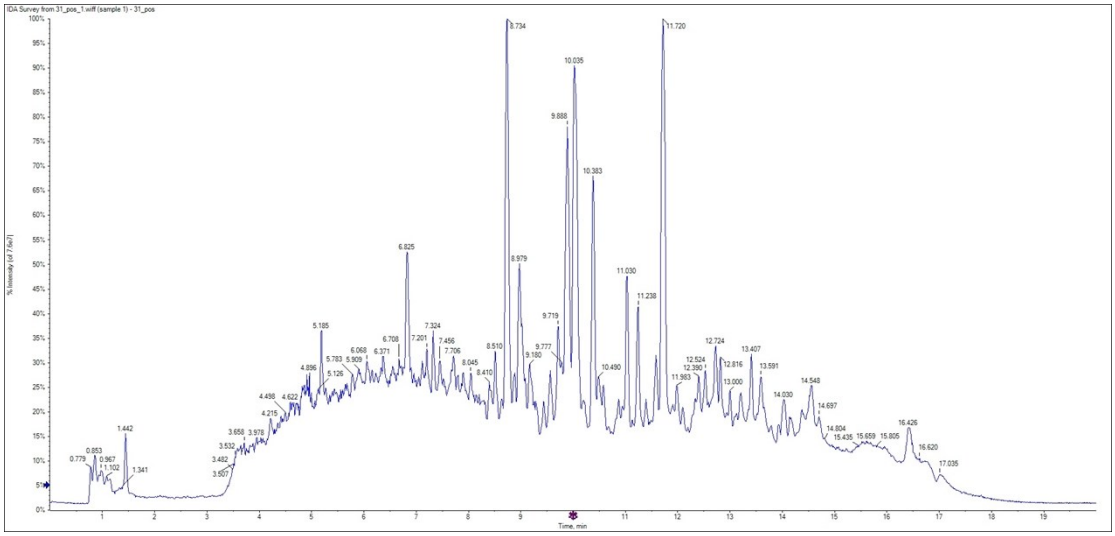
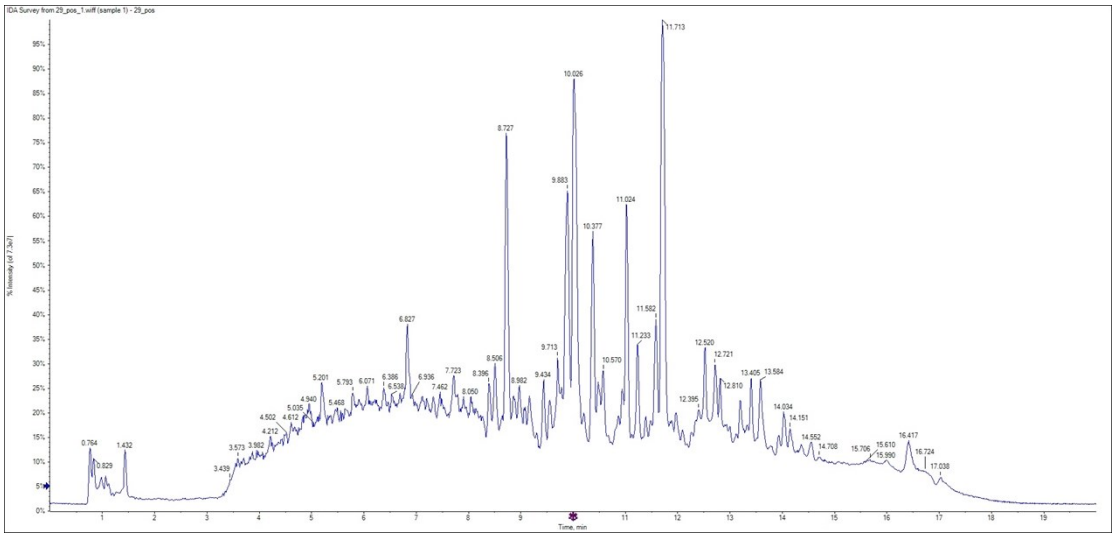
WKY groups (n=6): ES+ modes of rats in WKY groups





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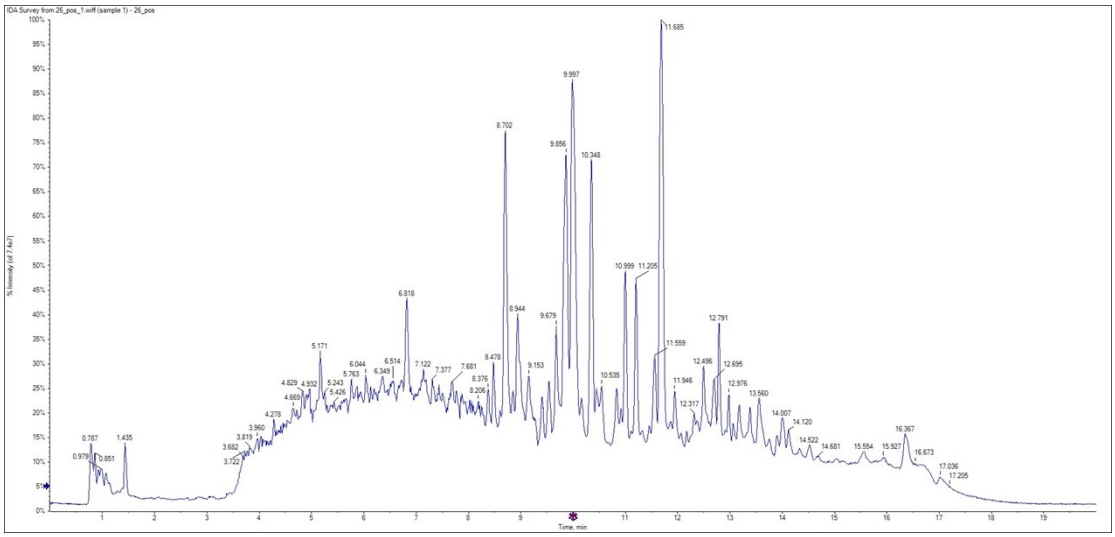
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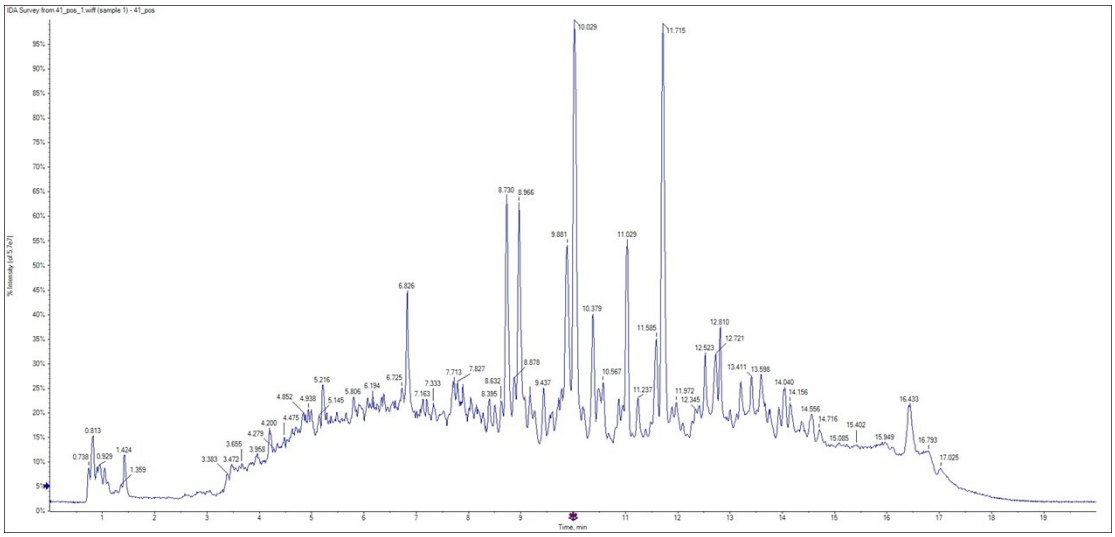
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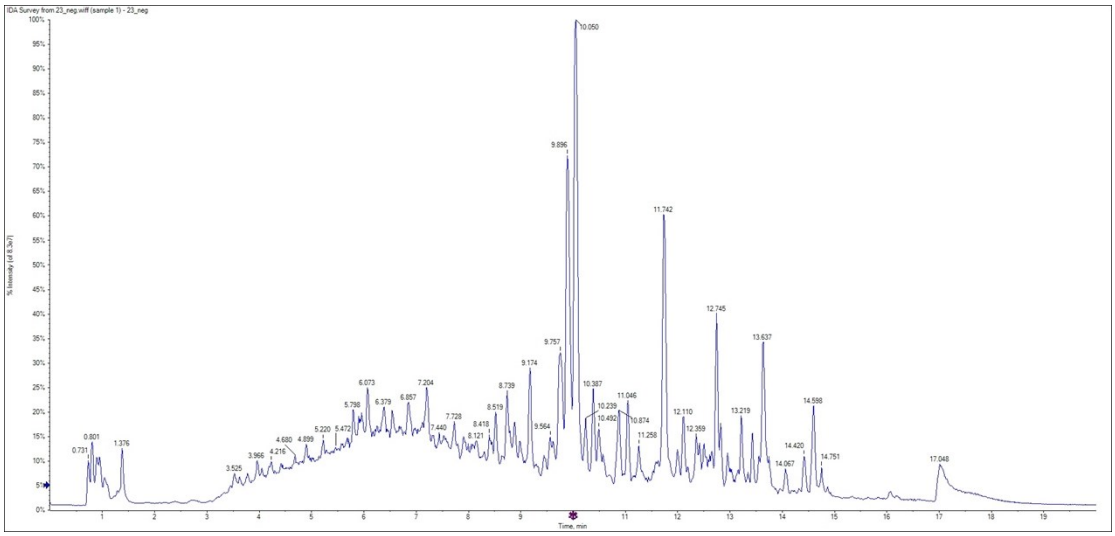
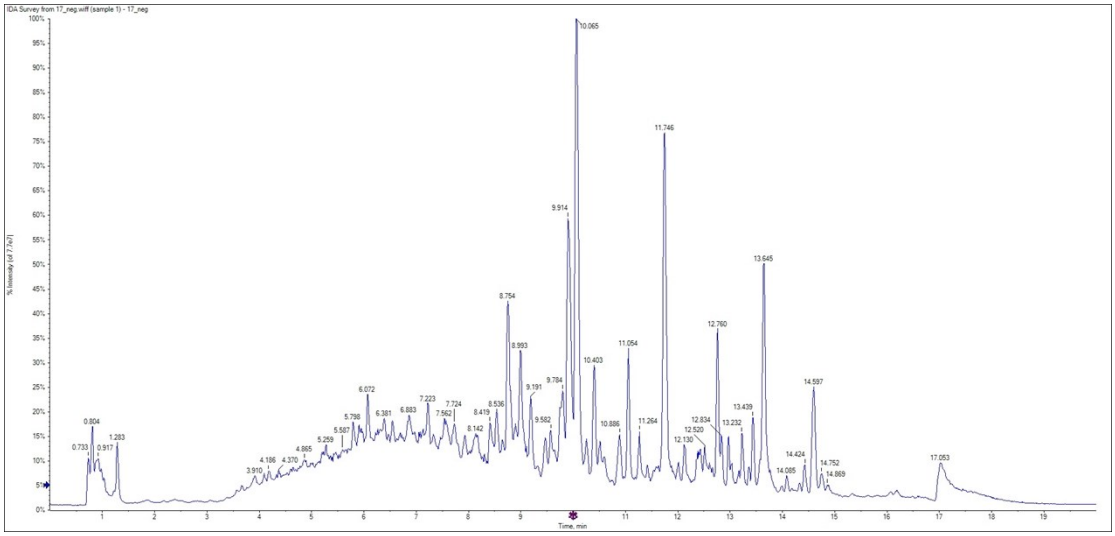
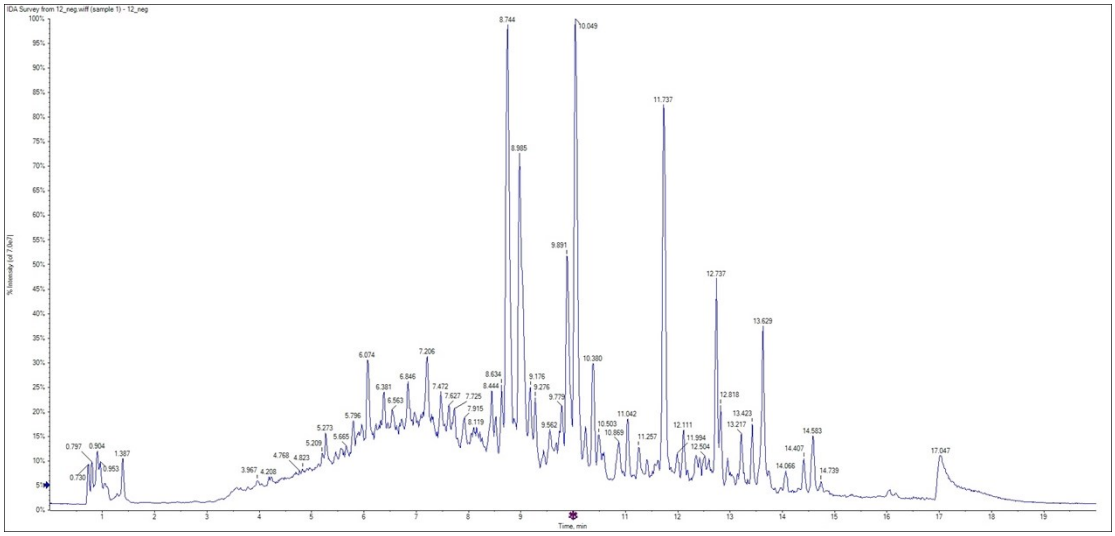
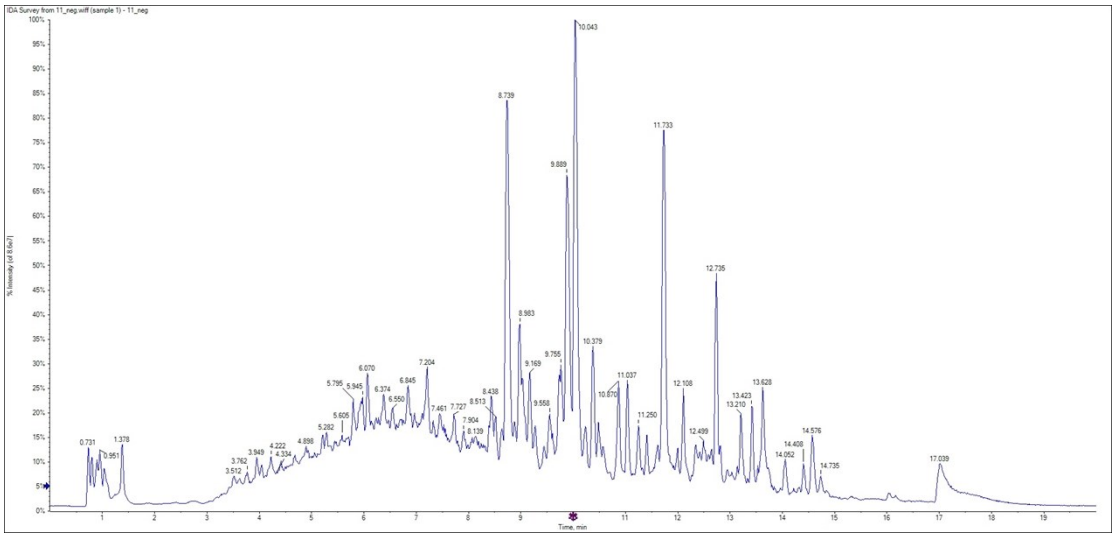
WKY+SISE groups (n=5): ES− modes of rats in WKY+SISE groups





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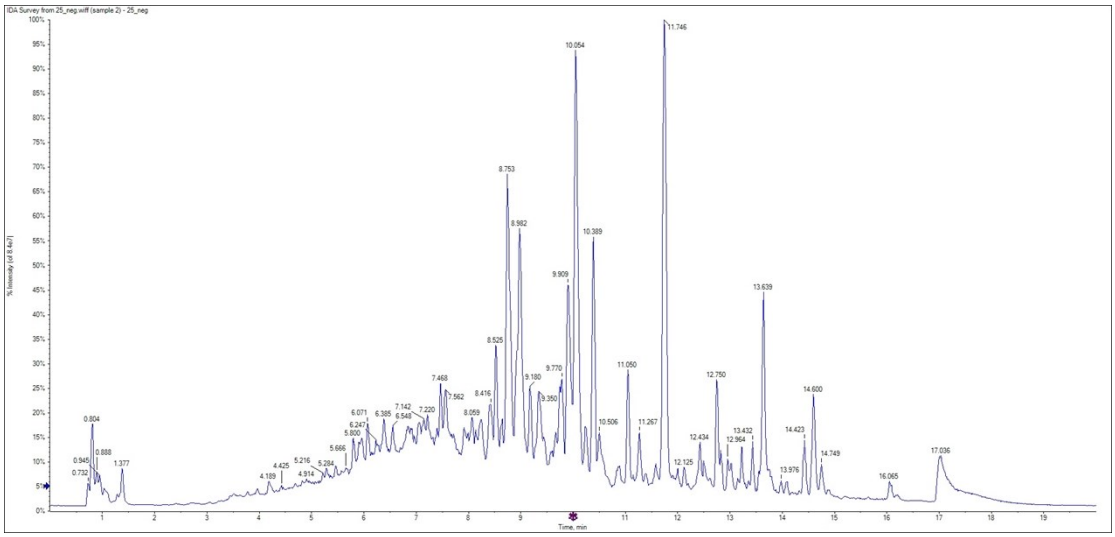
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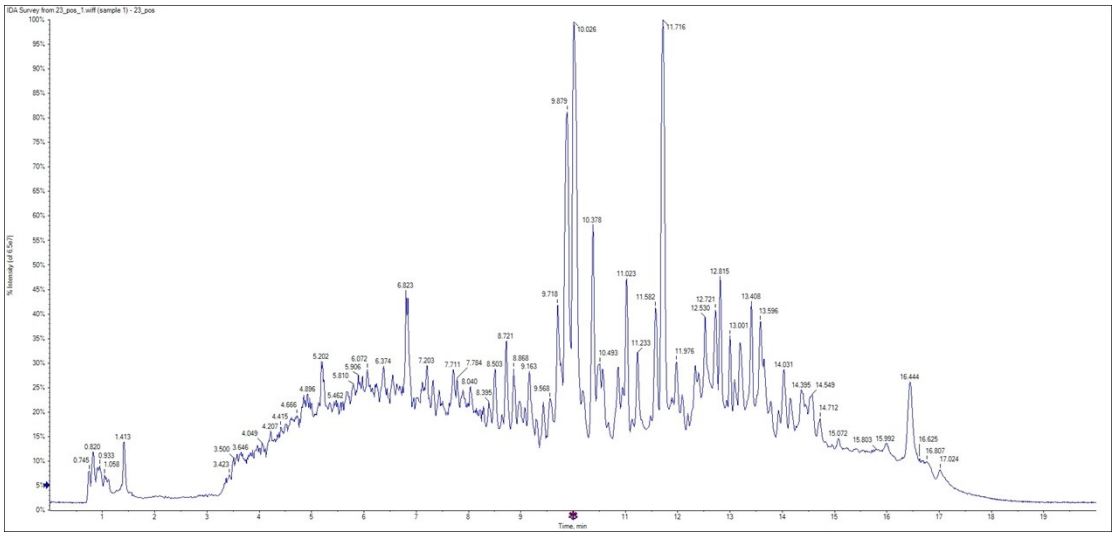
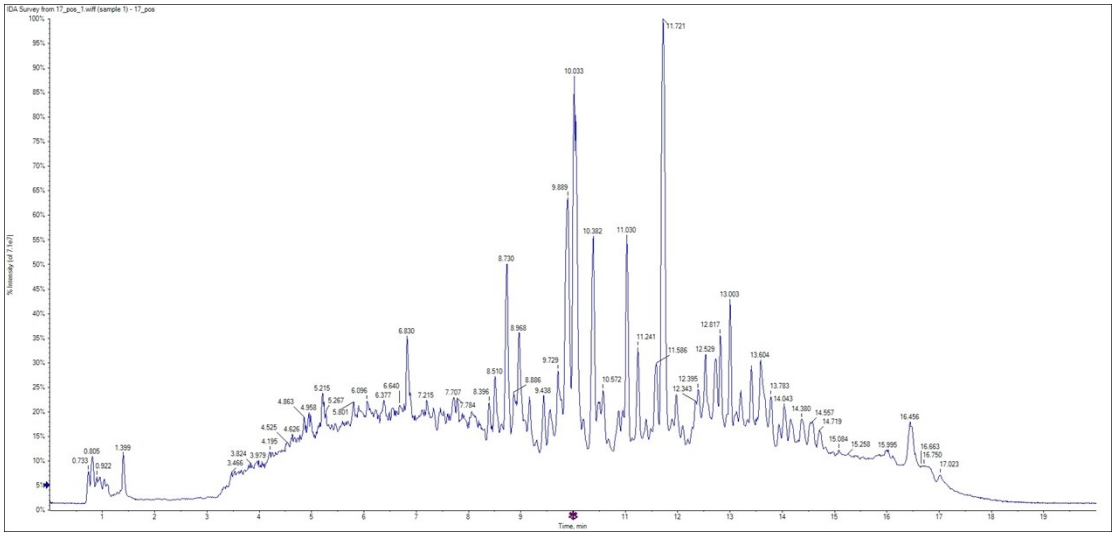
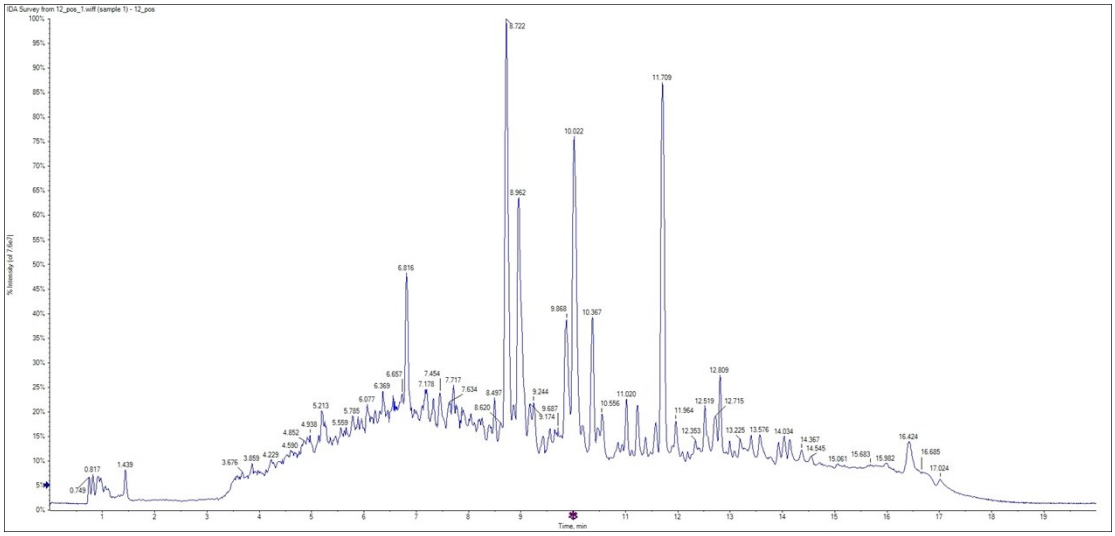
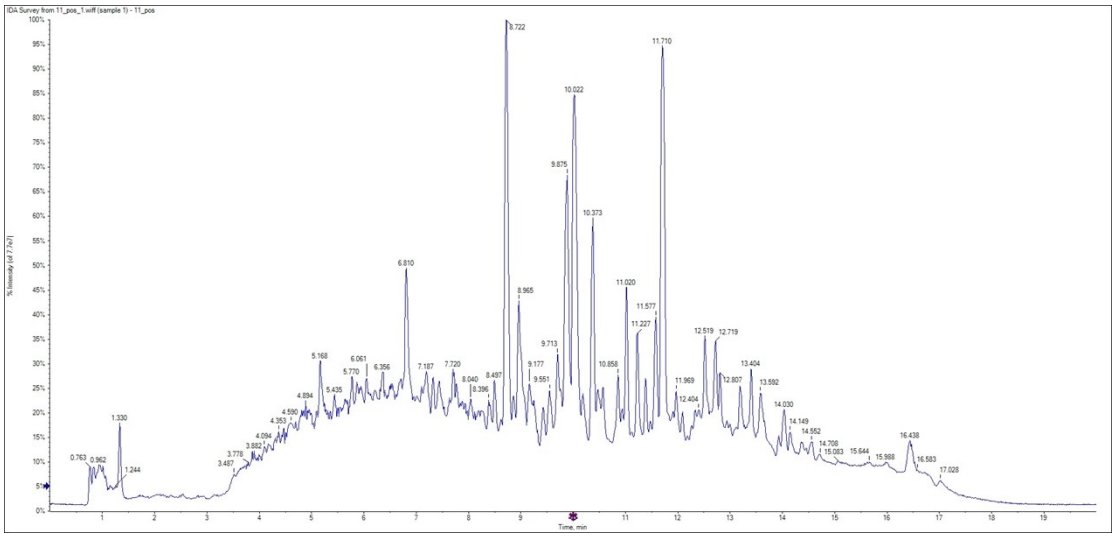
WKY+SISE groups (n=5): ES+ modes of rats in WKY+SISE groups





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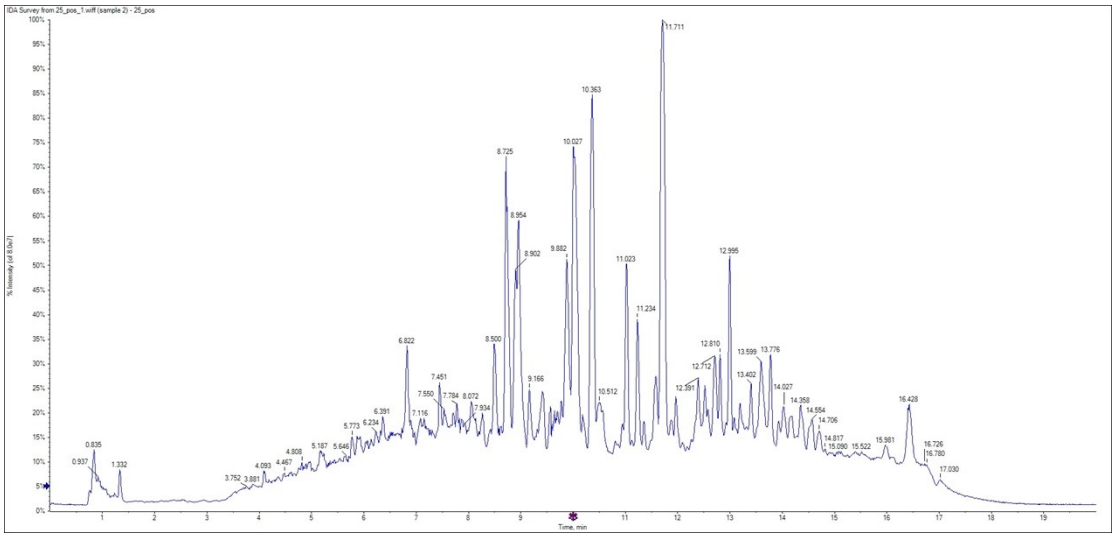
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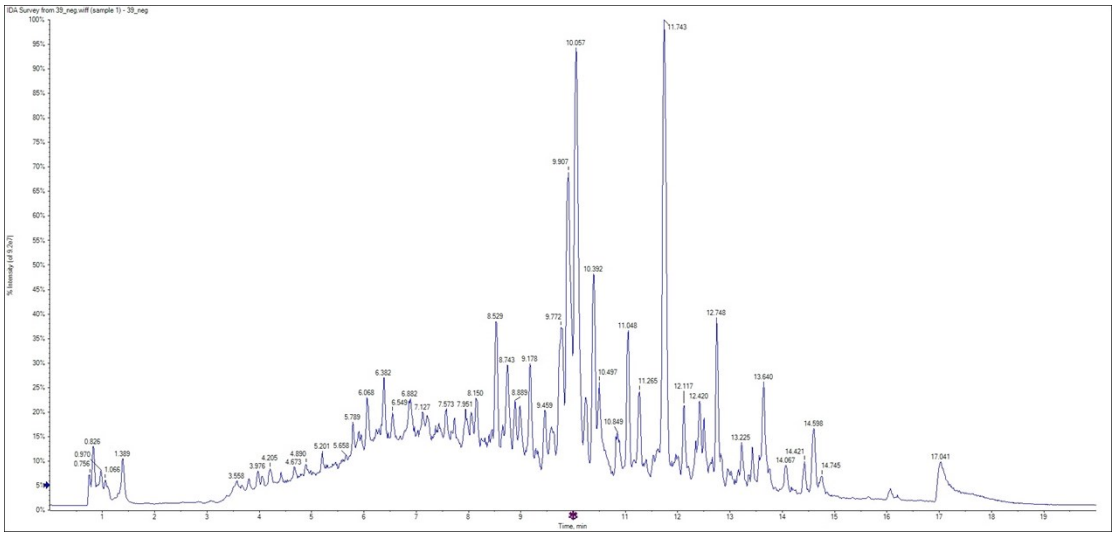
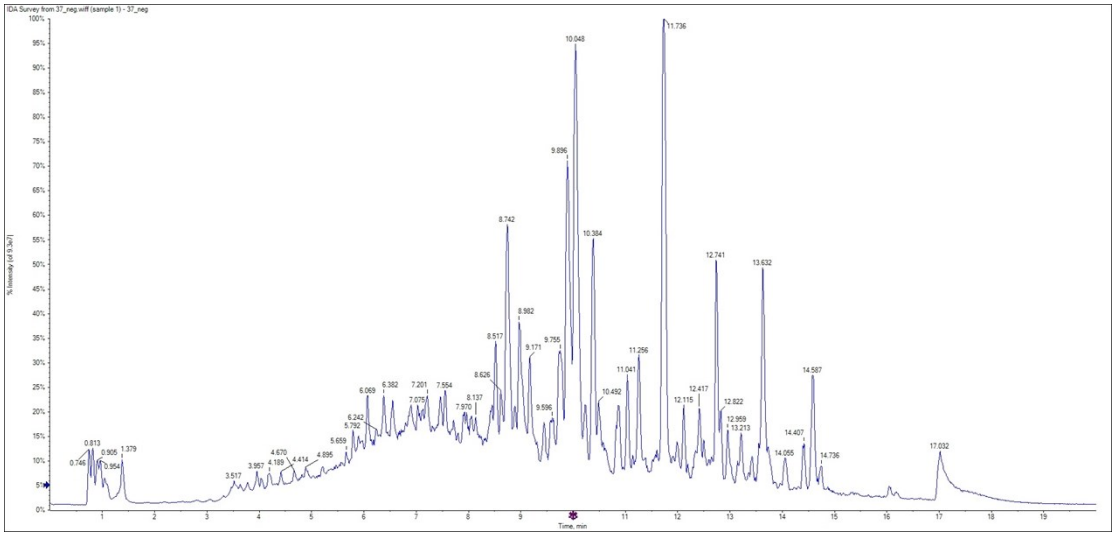
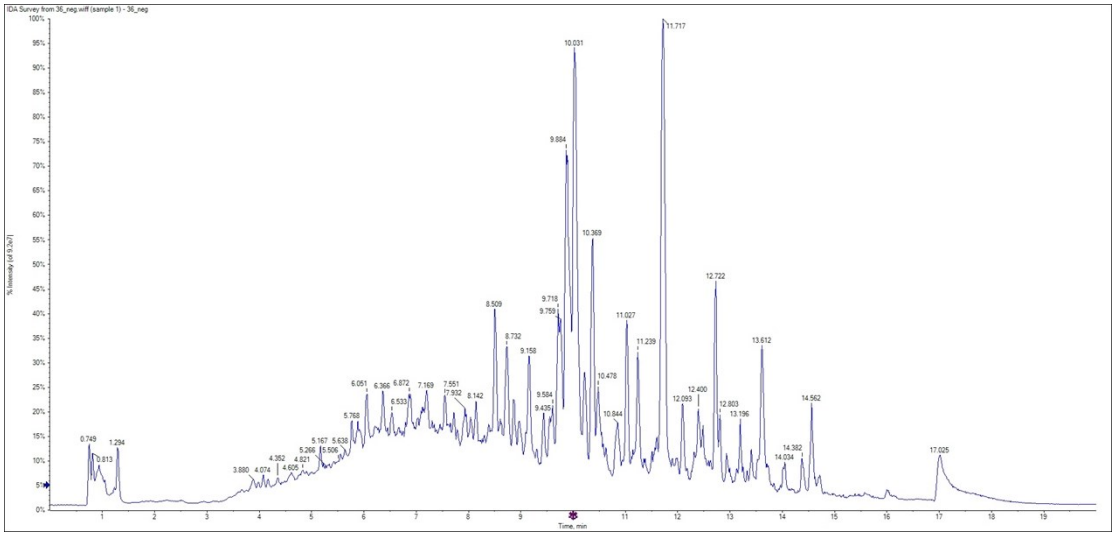
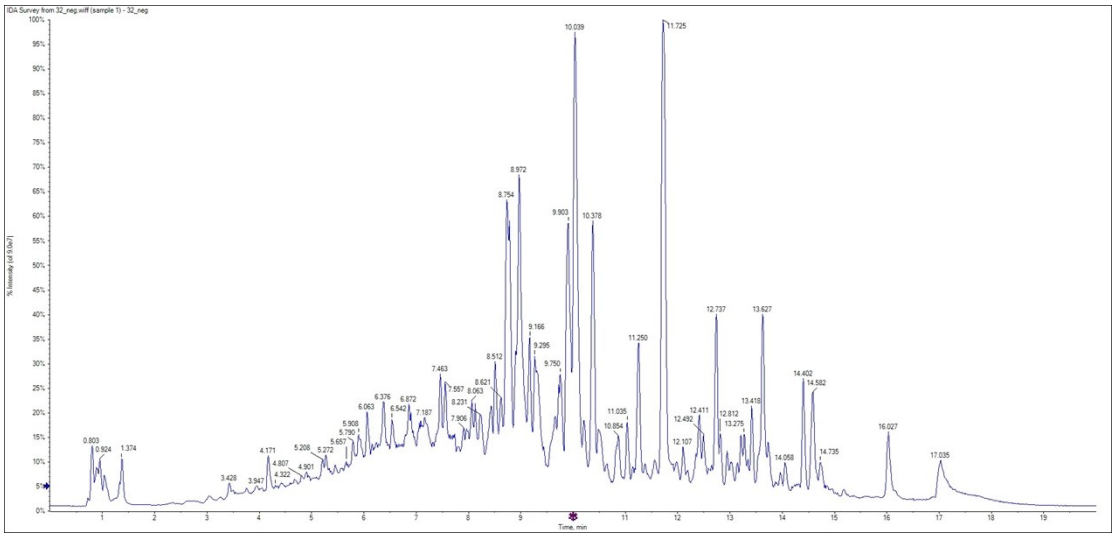
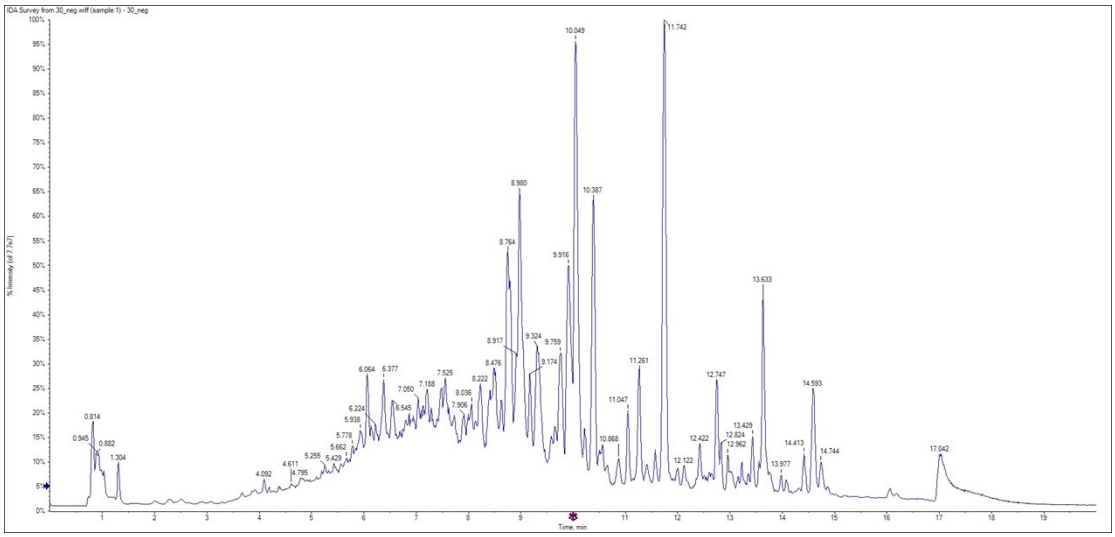
WKY+SA groups (n=8): ES− modes of rats in WKY+SA groups

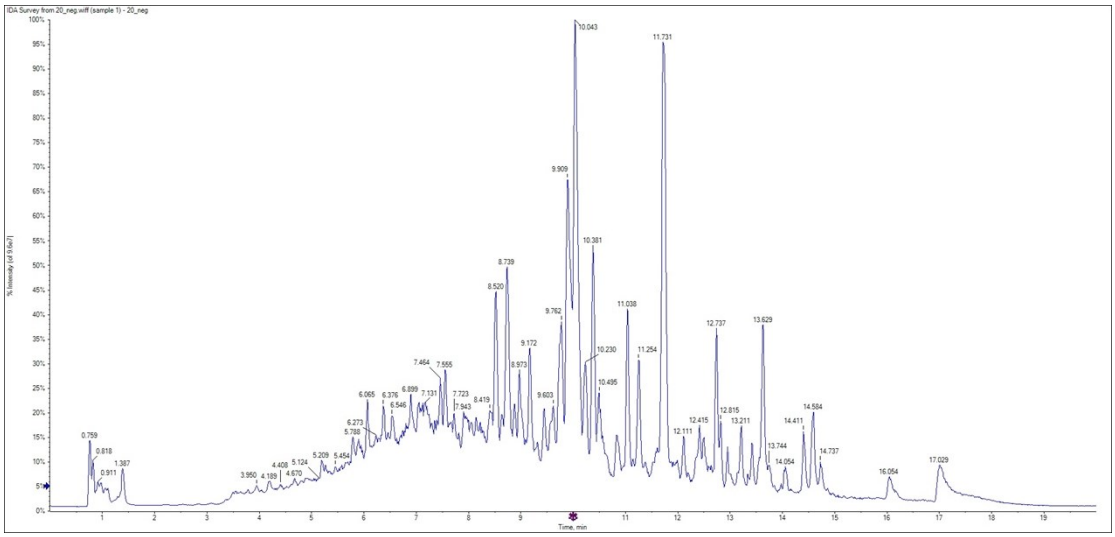


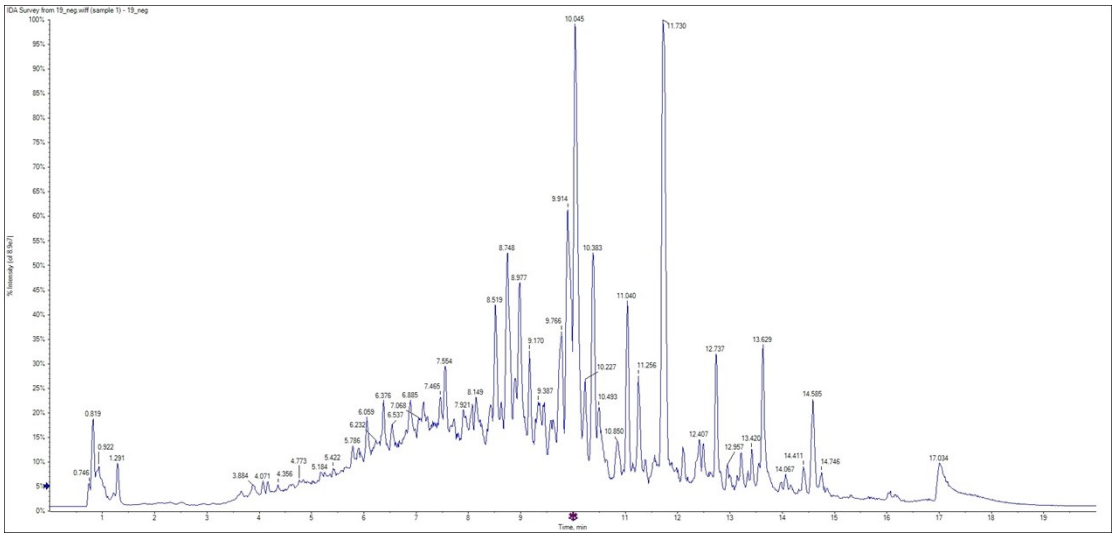


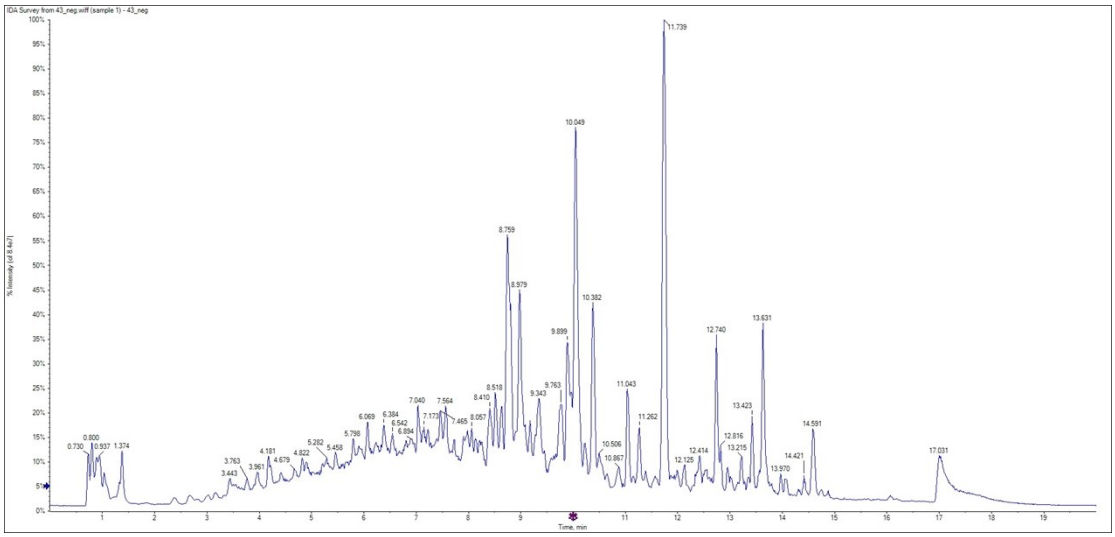



IDA Survey from 32_neg.wiff (sample 1) - 32_neg
% Intensity (of 9.9e7)
Time, min

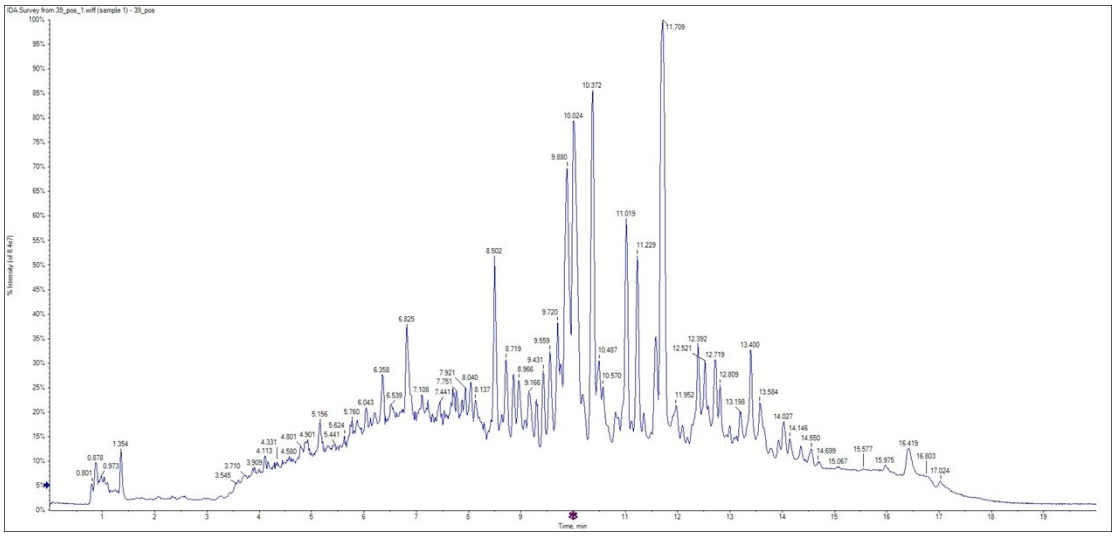

IDA Survey from 30_neg.wiff (sample 1) - 30_neg
% Intensity (of 7.7e7)
Time, min

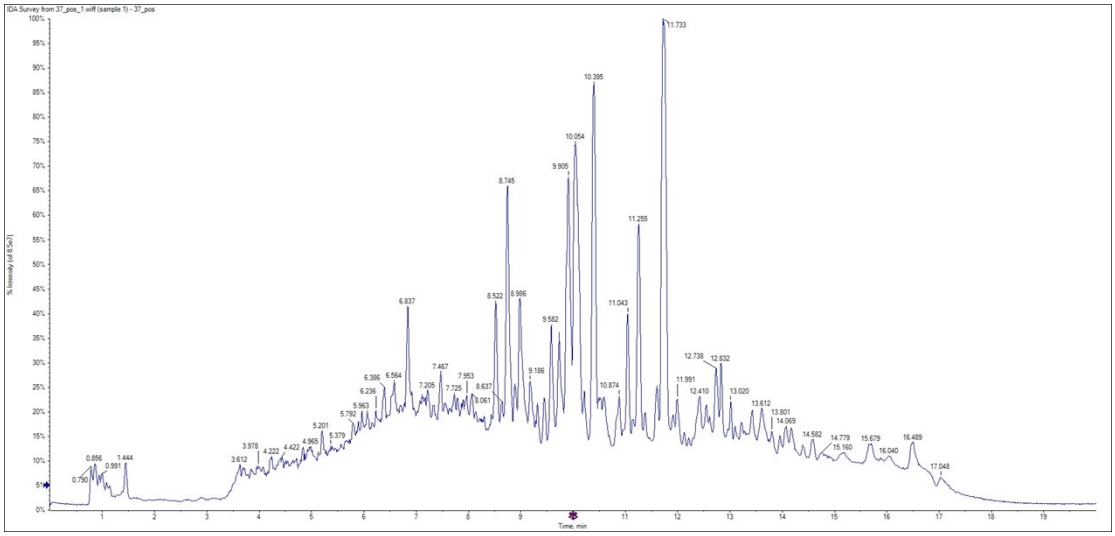

IDA Survey from 20_neg.wiff (sample 1) - 20_neg
% Intensity (of 9.0e7)
Time, min

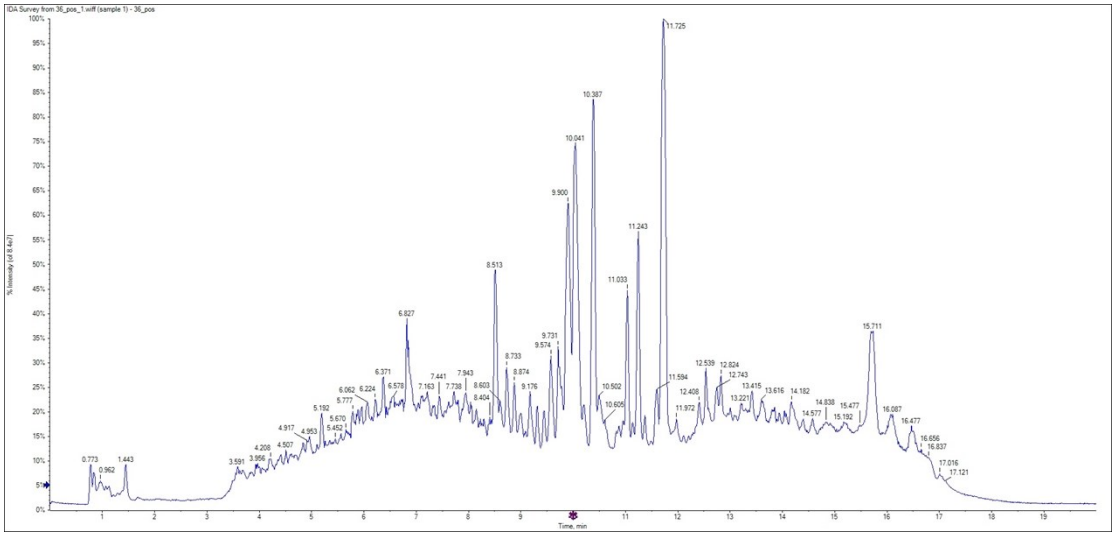

IDA Survey from 19_neg.wiff (sample 1) - 19_neg
% Intensity (of 8.9e7)
Time, min

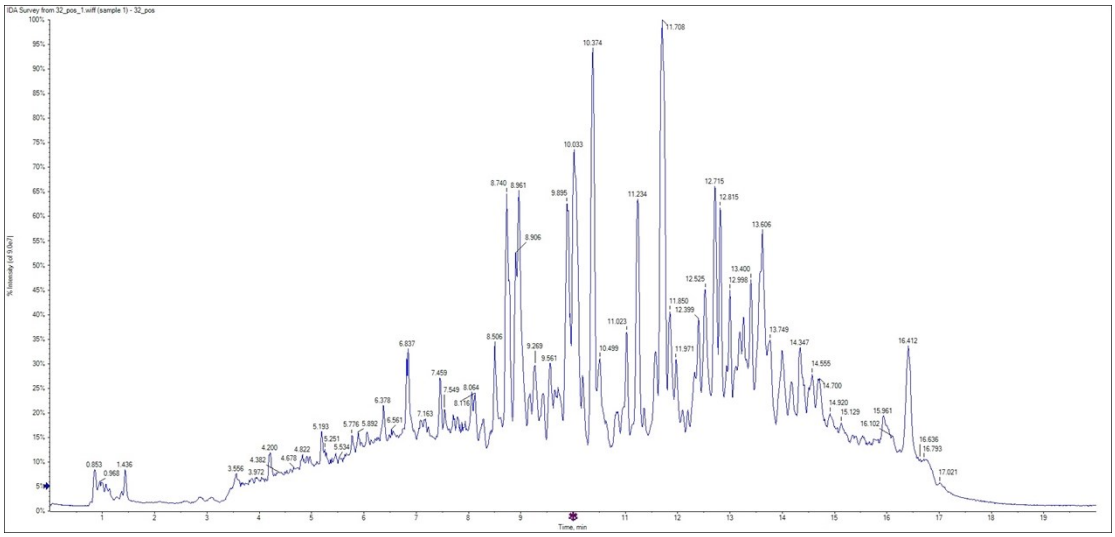

IDA Survey from 43_neg.wiff (sample 1) - 43_neg
% Intensity (of 8.4e7)
Time, min

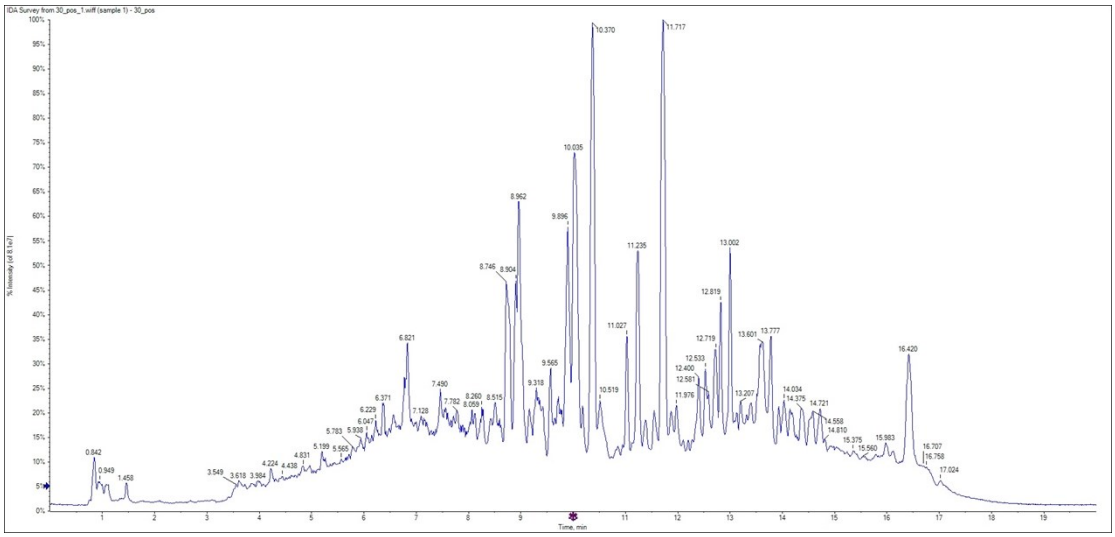
WKY+SA groups (n=8): ES+ modes of rats in WKY+SA groups

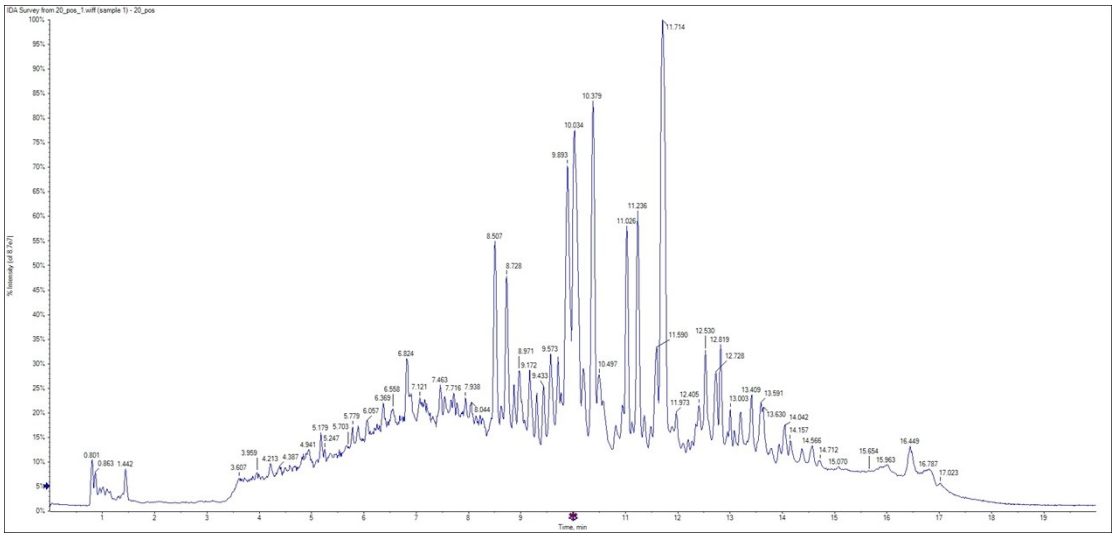


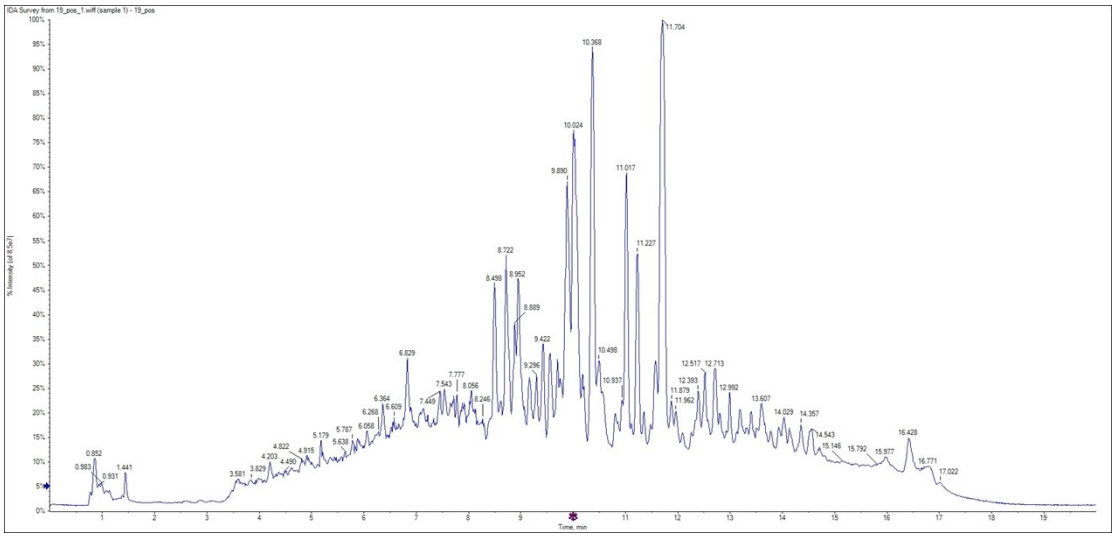


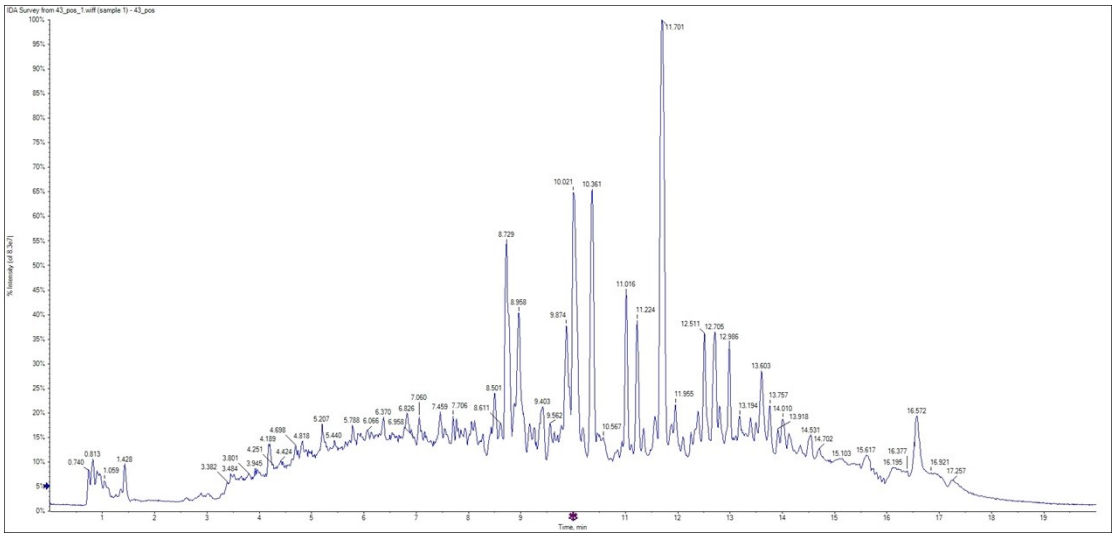



IDA Survey from 32_pos_1.wiff (sample 1) - 32_pos
Time, min

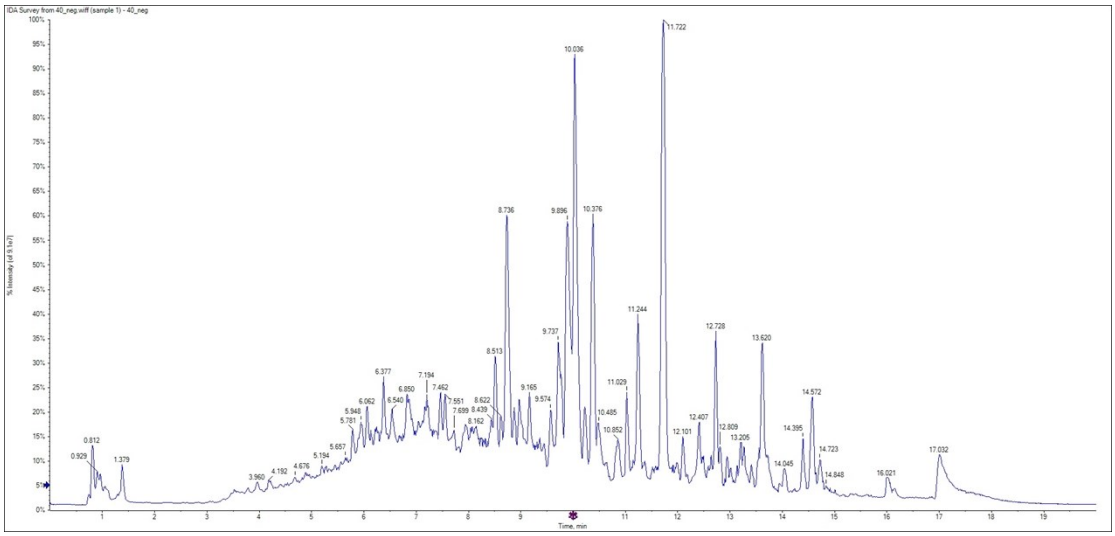

IDA Survey from 30_pos_1.wiff (sample 1) - 30_pos
Time, min

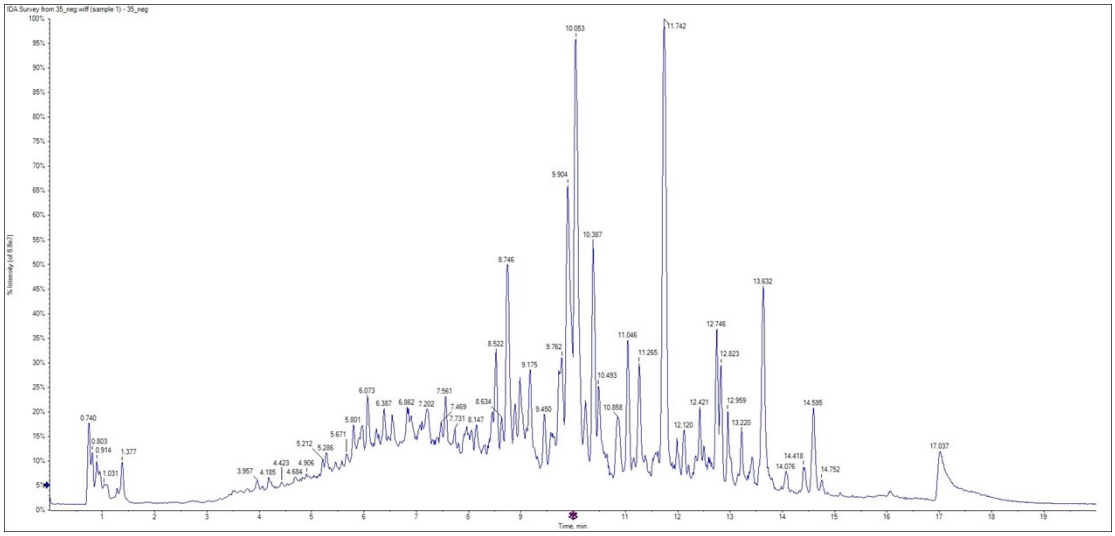

IDA Survey from 20_pos_1.wiff (sample 1) - 20_pos
Time, min

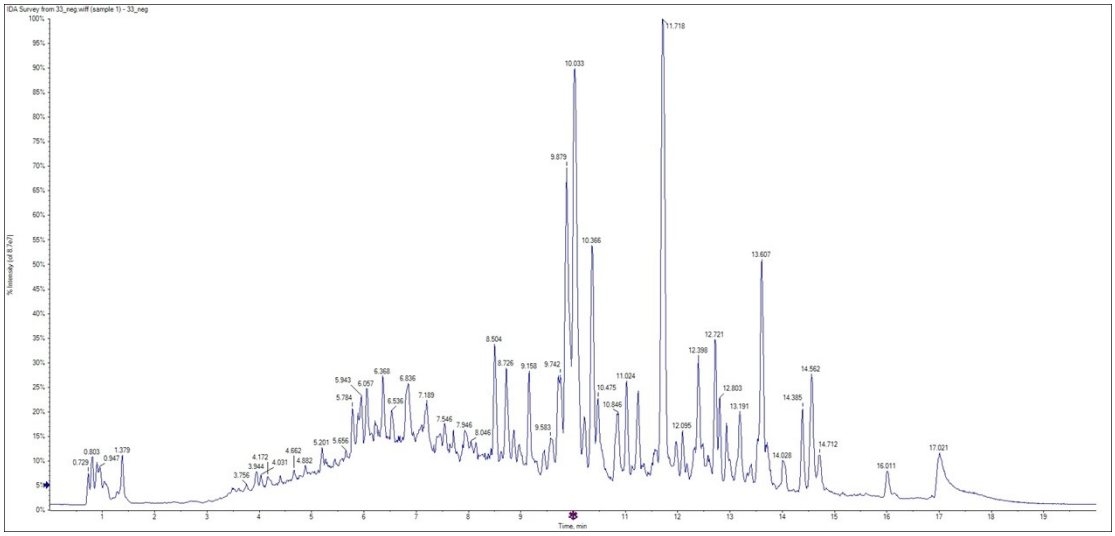

IDA Survey from 19_pos_1.wiff (sample 1) - 19_pos
% Intensity (of 8.5e7)
Time, min

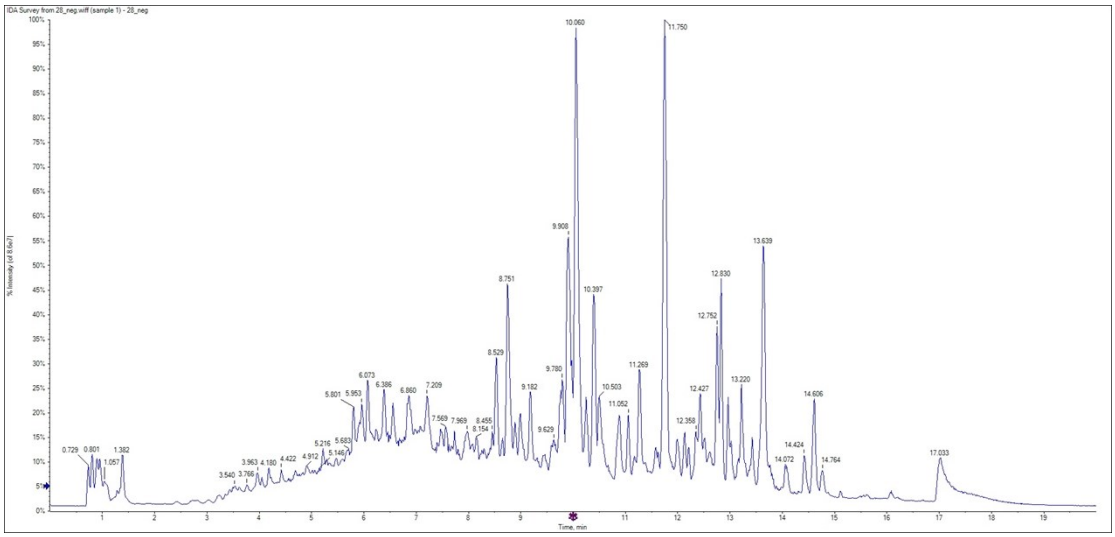

IDA Survey from 43_pos_1.wiff (sample 1) - 43_pos
% Intensity (of 8.3e7)
Time, min

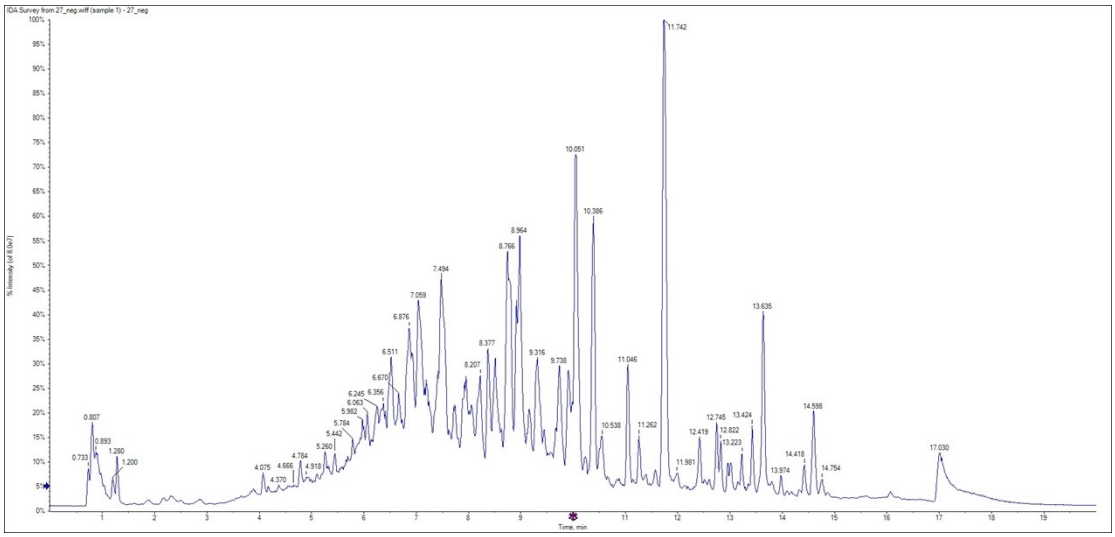
WKY+SA+SISE groups (n=9): ES− modes of rats in WKY+SA+SISE groups

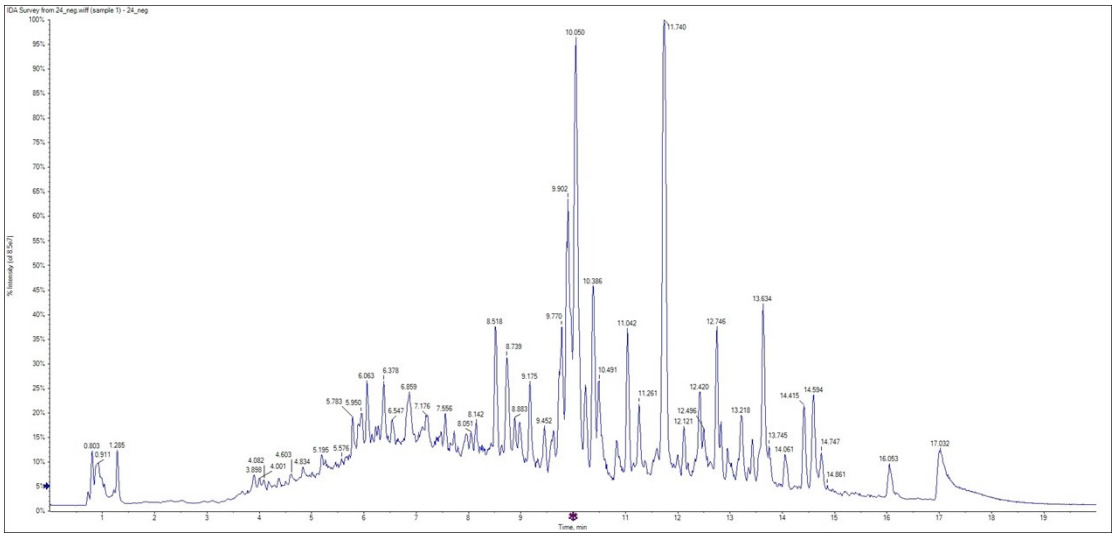


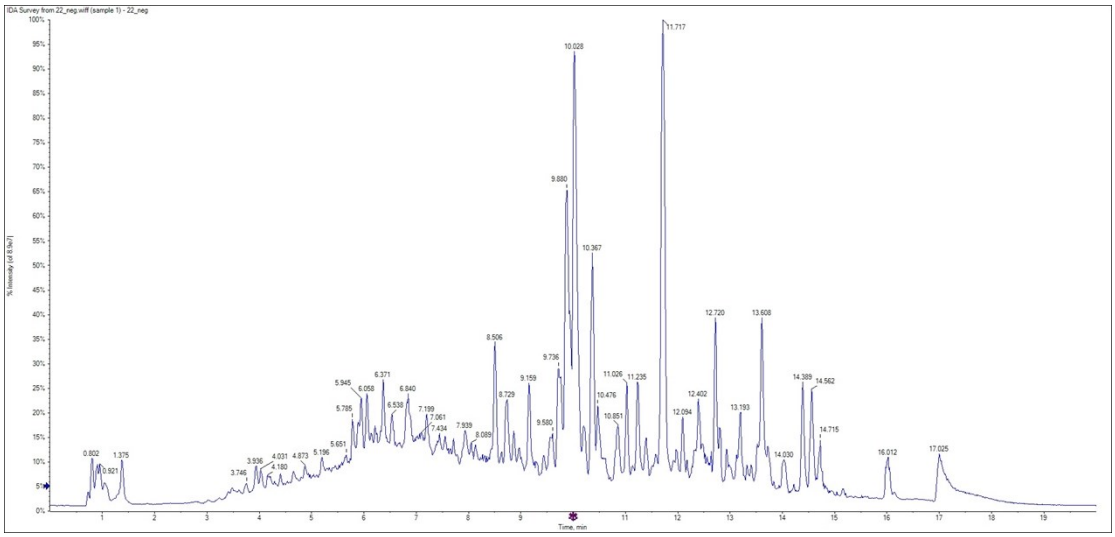


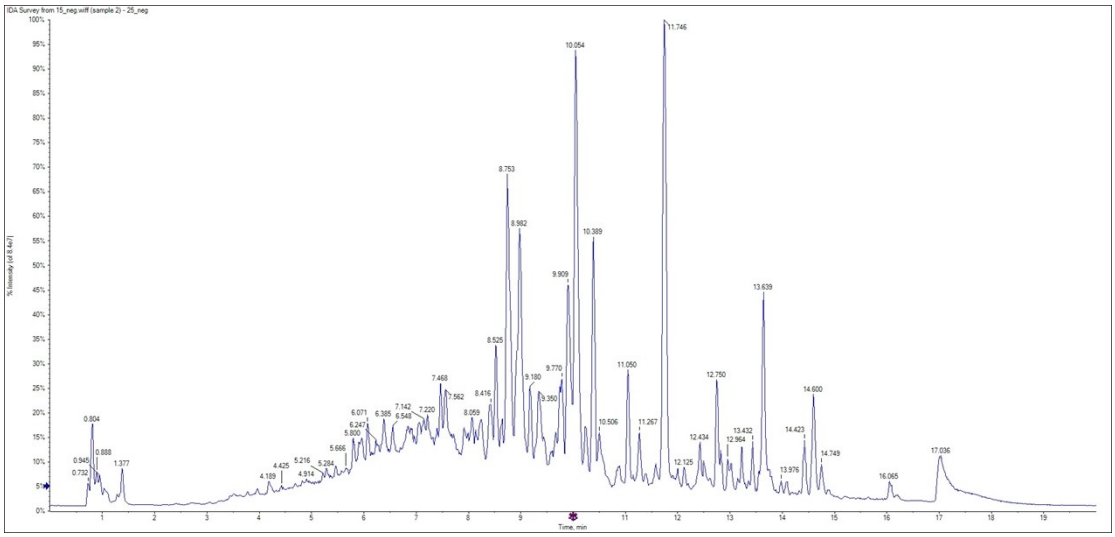


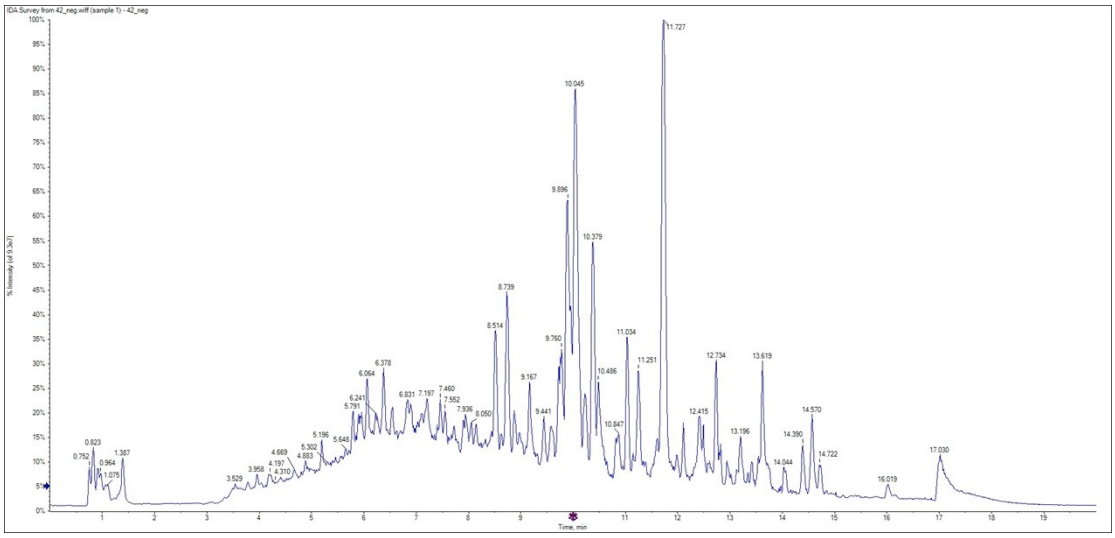

IDA Survey from 28_neg.wiff (sample 1) - 28_neg
% Intensity (of 8.6e7)
Time, min


IDA Survey from 27_neg.wiff (sample 1) - 27_neg
% Intensity (of 8.0e7)
Time, min

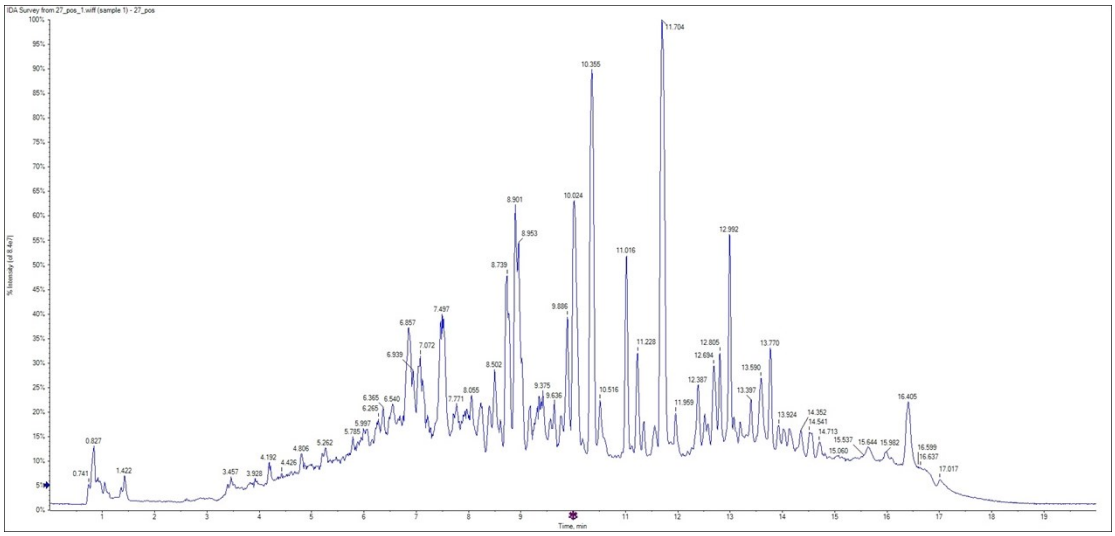

IDA Survey from 24_neg.wiff (sample 1) - 24_neg
% Intensity (of 8.2e7)
Time, min

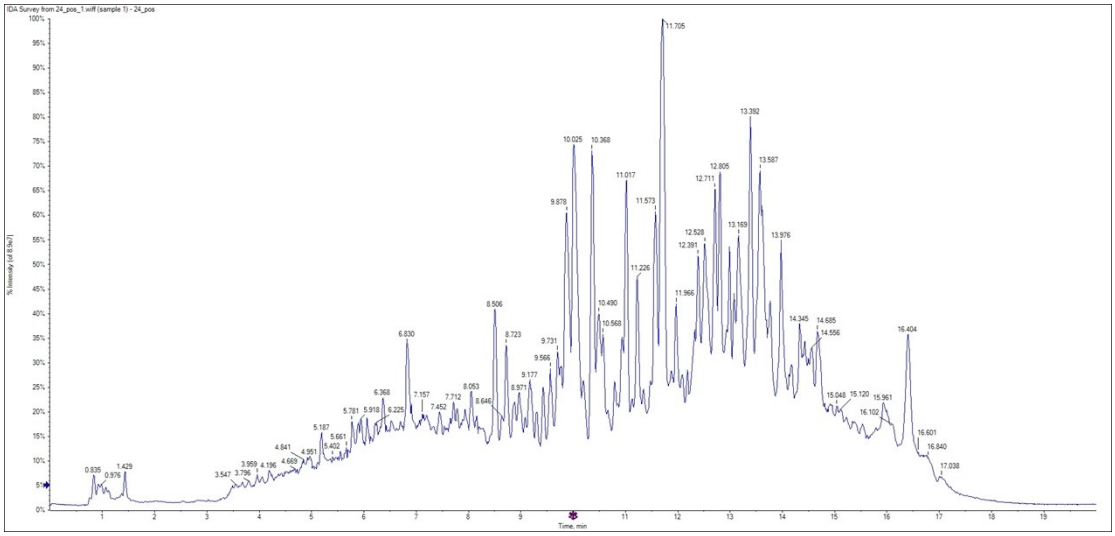

IDA Survey from 22_neg.wiff (sample 1) - 22_neg
% Intensity (of 8.9e7)
Time, min

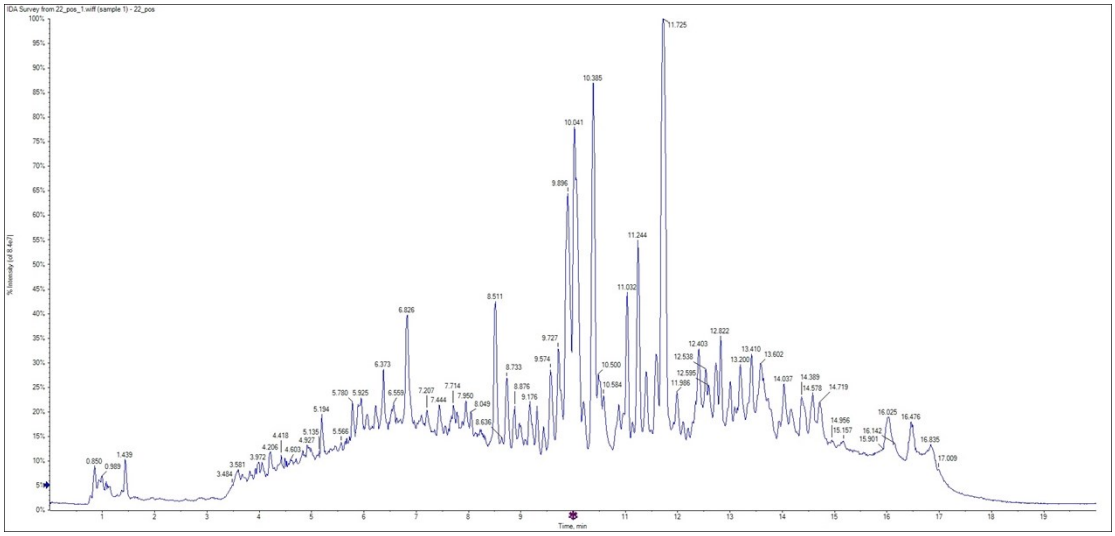

IDA Survey from 15_neg.wiff (sample 2) - 25_neg
% Intensity (of 8.4e7)
Time, min

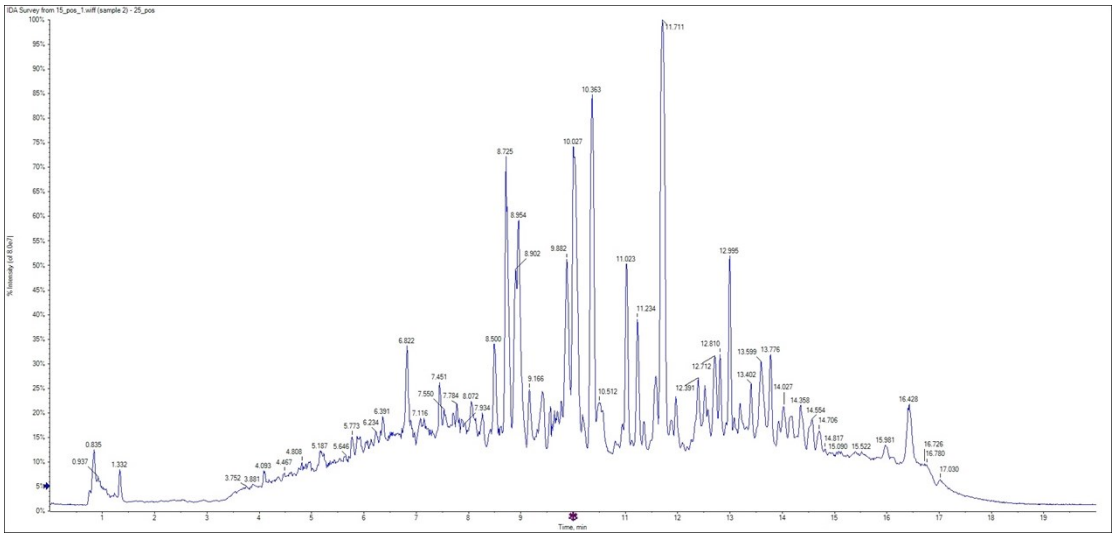

IDA Survey from 42_neg.wiff (sample 1) - 42_neg
% Intensity (of 9.3e7)
Time, min

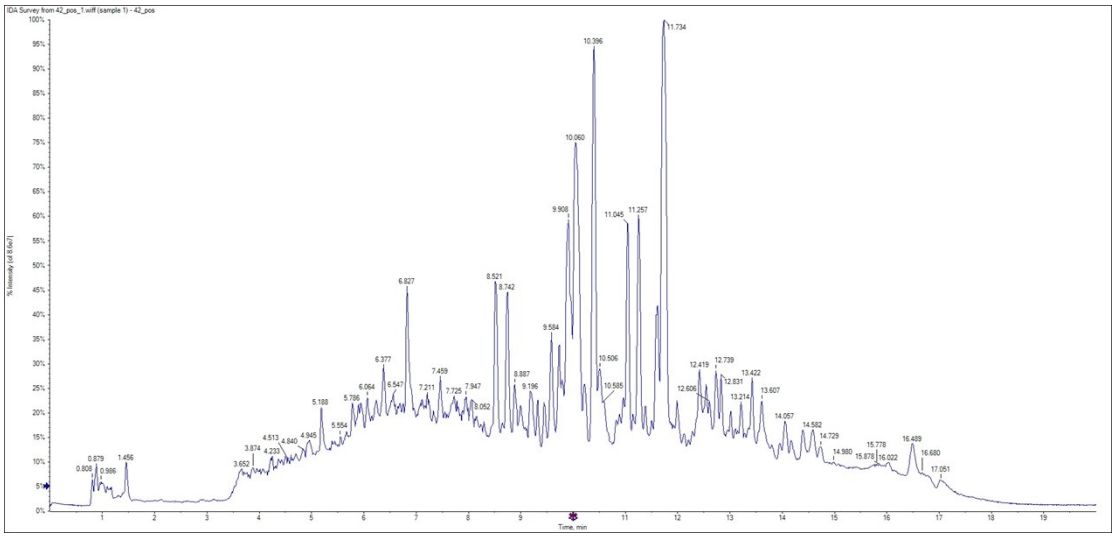
WKY+SA+SISE groups (n=9): ES+ modes of rats in WKY+SA+SISE groups

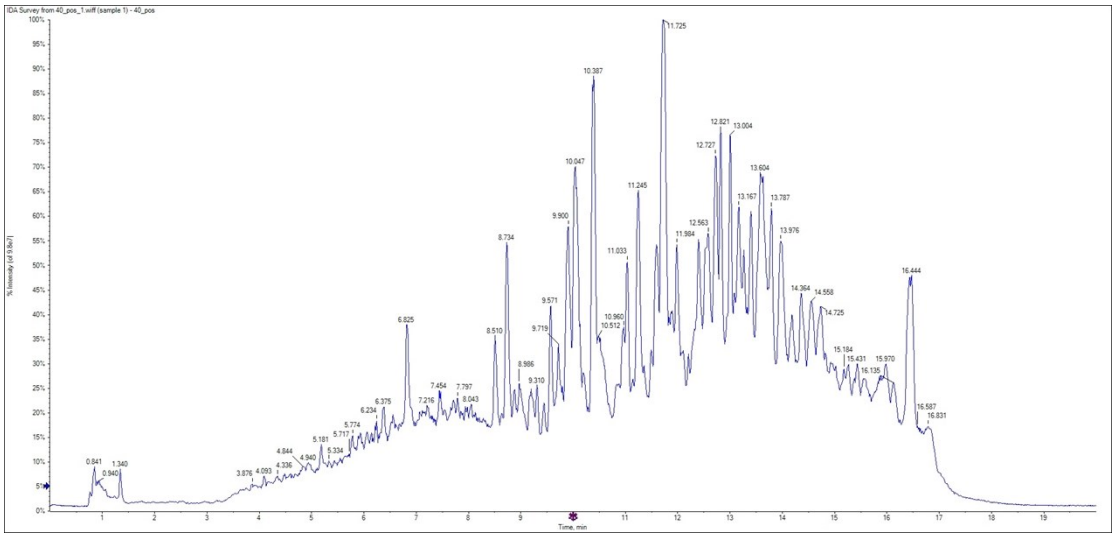


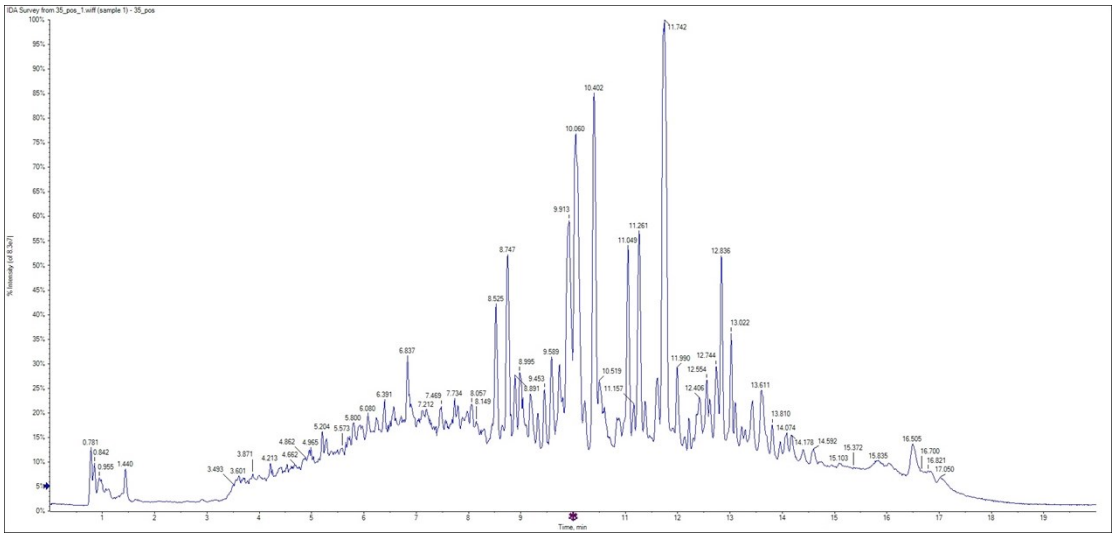


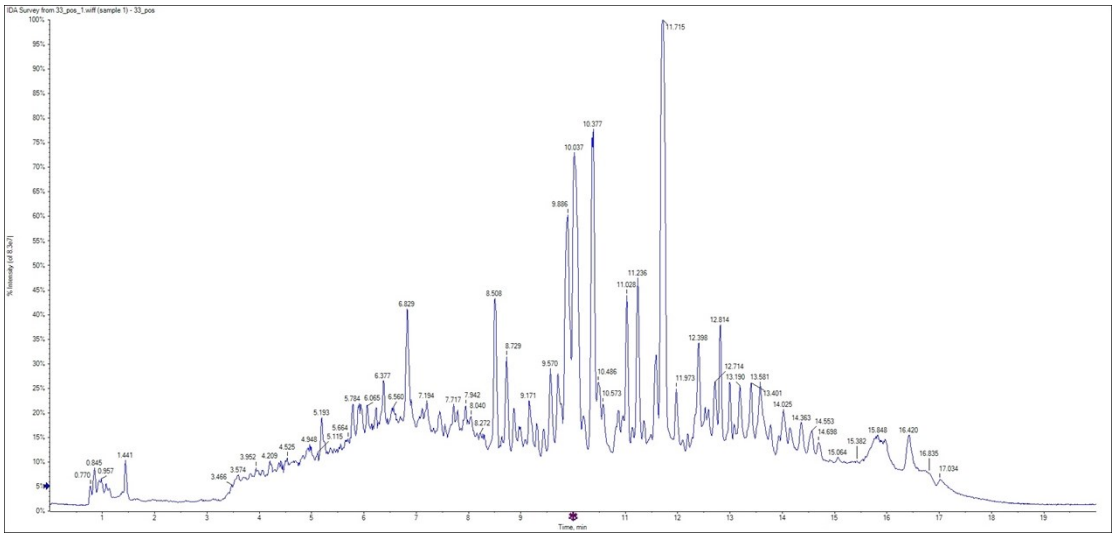


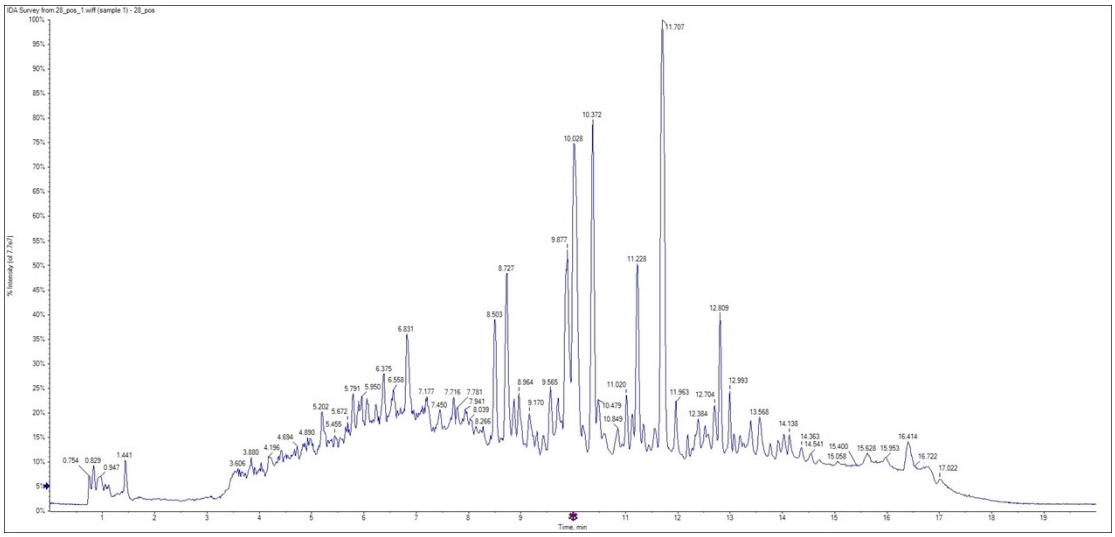

IDA Survey from 15_pos_1.wiff (sample 2) - 25_pos
% Intensity (of 8.0e7)
Time, min


IDA Survey from 42_pos_1.wiff (sample 1) - 42_pos
% Intensity (of 8.0e7)
Time, min


IDA Survey from 40_pos_1.wiff (sample 1) - 40_pos
% Intensity (of 9.0e7)
Time, min


IDA Survey from 35_pos_1.wiff (sample 1) - 35_pos
% Intensity (of 8.3e7)
Time, min


IDA Survey from 33_pos_1.wiff (sample 1) - 33_pos
% Intensity (of 8.3e7)
Time, min


IDA Survey from 28_pos_1.wiff (sample 1) - 28_pos
% Intensity (of 7.7e7)
Time, min