

Supplementary Materials

Response Surface

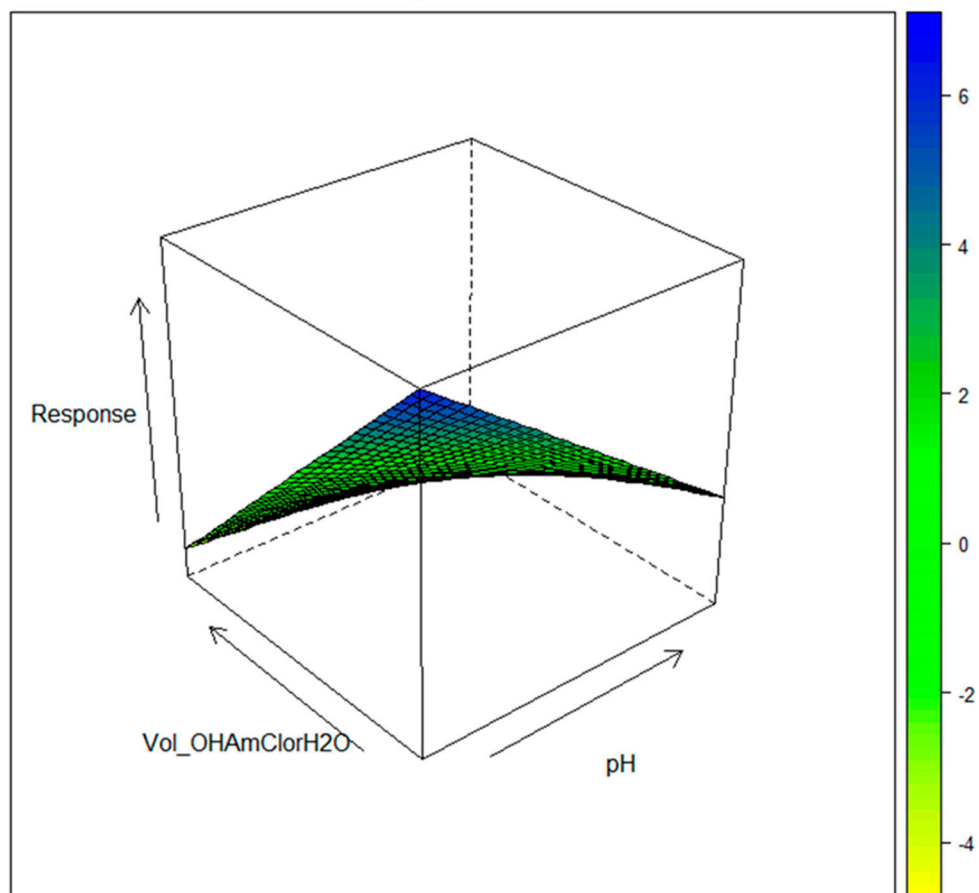


Figure S1 Contour plot of the full-factorial DoE: 2-D response surface plots for the first two factors of the DoE

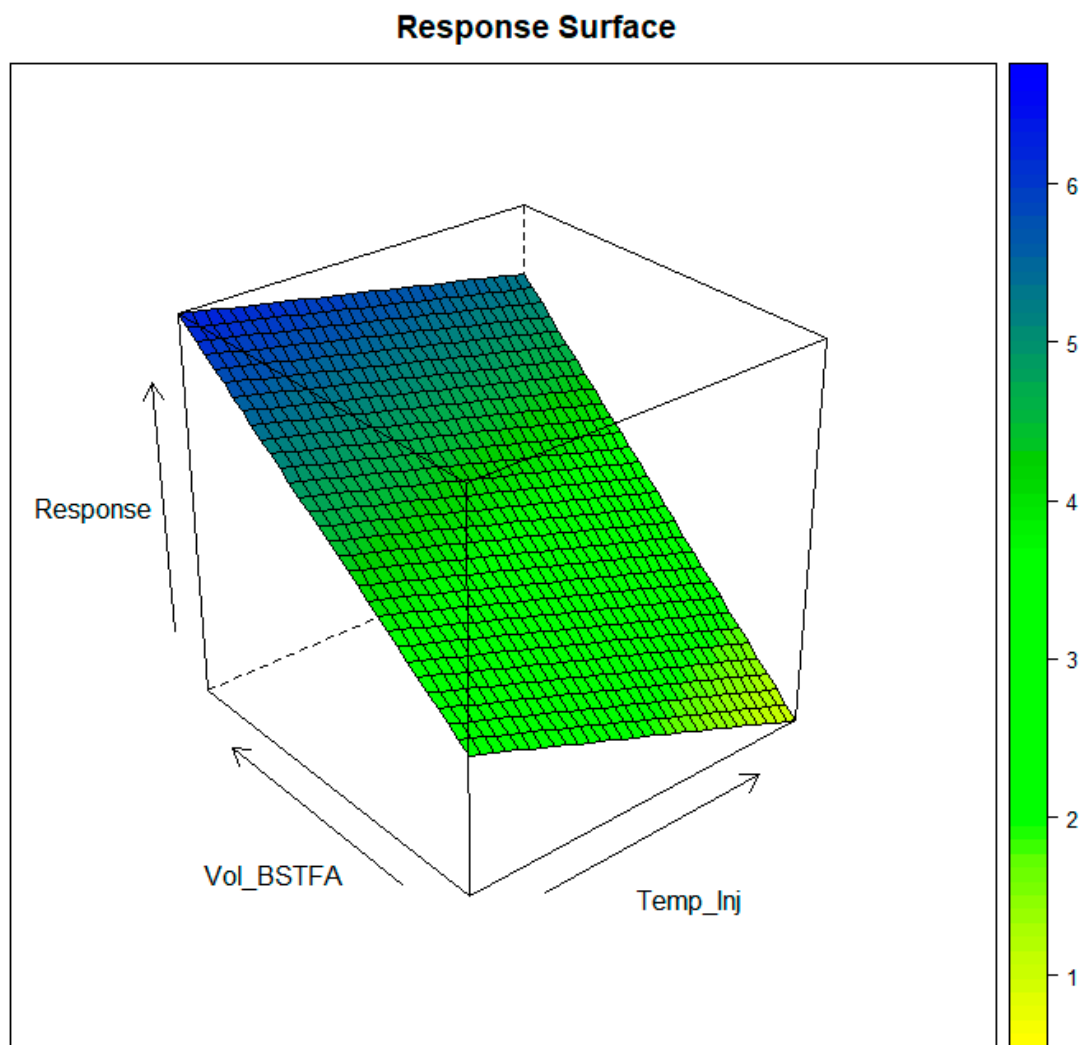


Figure S2 Contour plot of the full-factorial DoE: 3-D response surface plots for the second two factors

Table S1 Analyte name and response (peak area) for each experiment

ANALYTES/EXPERIMENT	3	11	14	4	13	8	7	5	10	6	2	9	16	1	12	15
INTERNAL STANDARD	11014	10639	10014	11054	9982	10307	11123	10280	10186	11383	11154	11324	10808	11209	10668	10855
3-HYDROXYISOVALERIC ACID	535831	597837	692458	847329	552036	788120	622532	520860	439440	836021	945162	1853732	583526	518740	558658	854602
METHYLMALONIC ACID	14523753	13901001	13404329	14112666	13819681	13818179	14095243	14275975	13703759	15131382	15007565	14801712	13841652	15007579	14018510	14587748
4-HYDROXYBUTYRIC ACID	504023	798660	566299	565100	542902	636300	468535	604845	497992	740585	773628	791437	708913	513147	545165	801215
ETHYLMALONIC ACID	6319166	5960874	5644648	5944483	5717947	5784049	6058733	6006072	5847179	6507768	6240931	6349558	6007100	6331588	5954800	6146519
FUMARIC ACID	28644452	23085269	27717060	28385127	28388197	26681758	26855023	28677974	26390965	25509178	34505974	32333719	22712165	31467075	26619320	24720562
MEVALONOLACTONE	2508855	2339504	5034814	4444637	5063234	4049418	3578024	5502933	3788238	4483734	6579938	12060542	4459884	6237959	4949775	4997173
GLUTARIC ACID	16416563	15605303	15278685	16651537	15321956	15683213	16087025	15935934	14898477	16583719	17036411	17299031	15659911	16989748	15600234	15625696
3-METHYLGLUTARIC ACID	12732636	12048422	11445246	12564604	11452889	11832017	12517353	11883049	11530420	12900866	12564502	12945234	12064372	12786513	12152959	12235491
3-METHYLGLUTACONIC ACID (2 peaks)	551260	506621	502818	595407	495857	515377	559438	531002	499830	581727	558912	598779	522145	563184	558292	514651
ADIPIC ACID	45350677	43408289	41508765	45157343	41206413	42328796	44759782	42694404	41215326	46241235	45289246	46439834	43416752	46249795	43335593	43632911
PYROGLUTAMIC ACID	23485804	24611086	23589985	23092161	28761196	21889127	20066131	21807596	23535120	19304587	23741254	33211007	21067173	20901408	13489602	11884337
TIGLYL GLYCINE	2572449	2459769	2386632	2637168	2415660	2466830	2620082	2516294	2396434	2724314	2626850	2602982	2514268	2743270	2522316	2545432
2-HYDROXYGLUTARIC ACID	15976503	15669039	18694411	19867086	18714419	19405870	15852490	19309107	15022661	17485370	21738239	22498904	15462946	20384705	15799346	16343958
3-HYDROXY-3-METHYLGLUTARIC ACID	793800	439916	479365	585447	593963	507833	482836	595626	423480	761192	706942	712877	385564	558424	435517	484738
KETOGLUTARIC ACID	7563173	9452024	9180576	8631666	9147437	9567635	9268733	9679310	9030662	9798703	9562009	10493043	9506899	9251291	9482598	9925458
HEXANOYL GLYCINE	1886997	1812183	1732035	1928074	1734910	1791560	1968378	1805528	1785856	1996711	1884293	1965969	1892547	2001035	1882797	1854025
N-ACETYLASPARTIC ACID	28170	38458	57448	59422	60440	65647	53814	65952	46628	49469	60274	67959	48631	57682	56141	49422
SUBERIC ACID	23045303	22201147	20844565	22779082	20670373	21469457	23094937	21494602	21261172	23413329	22667194	23169579	22095369	23353489	22152234	22158008
2-METHYLCITRIC ACID	255993	249938	245617	285280	139156	181845	246109	110698	109750	193019	150173	330959	206565	149673	154647	157784
SEBACIC ACID	10041362	9722459	9175723	10250561	9094438	9412406	10283957	9427157	9387943	10476921	10145000	10290291	9746589	10374745	9681937	9823261
VANILLACTIC ACID	81137498	76199812	71080277	80120187	73590444	72143109	80871436	76494098	74411354	82966049	34116362	17976372	77653501	83465175	74643280	77062662

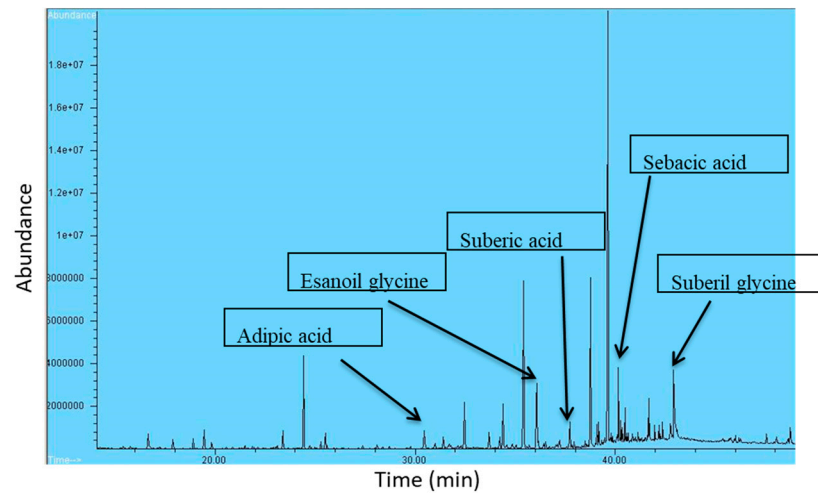


Figure S3 example of a chromatogram obtained in case of a pathological patient

This chromatogram is significant to diagnose MCADD: Medium-Chain Acyl-Coenzyme A Dehydrogenase Deficiency. The Medium-Chain Acyl-Coenzyme A Dehydrogenase is one of the enzymes involved in mitochondrial fatty acid β -oxidation and in particular in the oxidation of medium chain fatty acids. For this reason, in the chromatogram of a person affected by MCADD, all these medium chain fatty acids and their correspondent acylglycines are very high.