



INUS MEDICAL CENTER AG
TAGESKLINIKUM-CHAM

Chronic fatigue syndrom (CFS) myalgic encephalomyelitis (ME) a challenge for medicine and social systems in the 21st century

Evidences of international INUS Study for Aspects of epidemiology, inflammation, immunology,, infectiology, genetics and (environmental)-toxicology,
The use of INUSpheresis® as part of tertiare prevention.

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Medical Head of
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in cooperation with

Prof. Dr. med. Stefan R. Bornstein, internal medicine
Medical University Carl Gustav Carus
of technical University Dresden

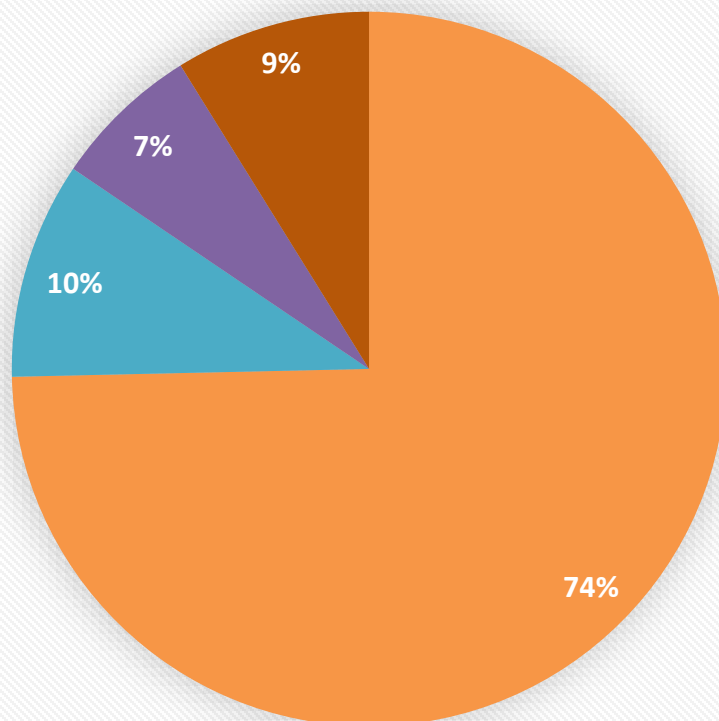
Co authors:

Dr. med. Til Steinmeier - Biologicum Hamburg,
Dr. med. Althunjan Gor - INUS Medical Center AG



Origin of patients with CFS/ME

Germany EU non EU USA



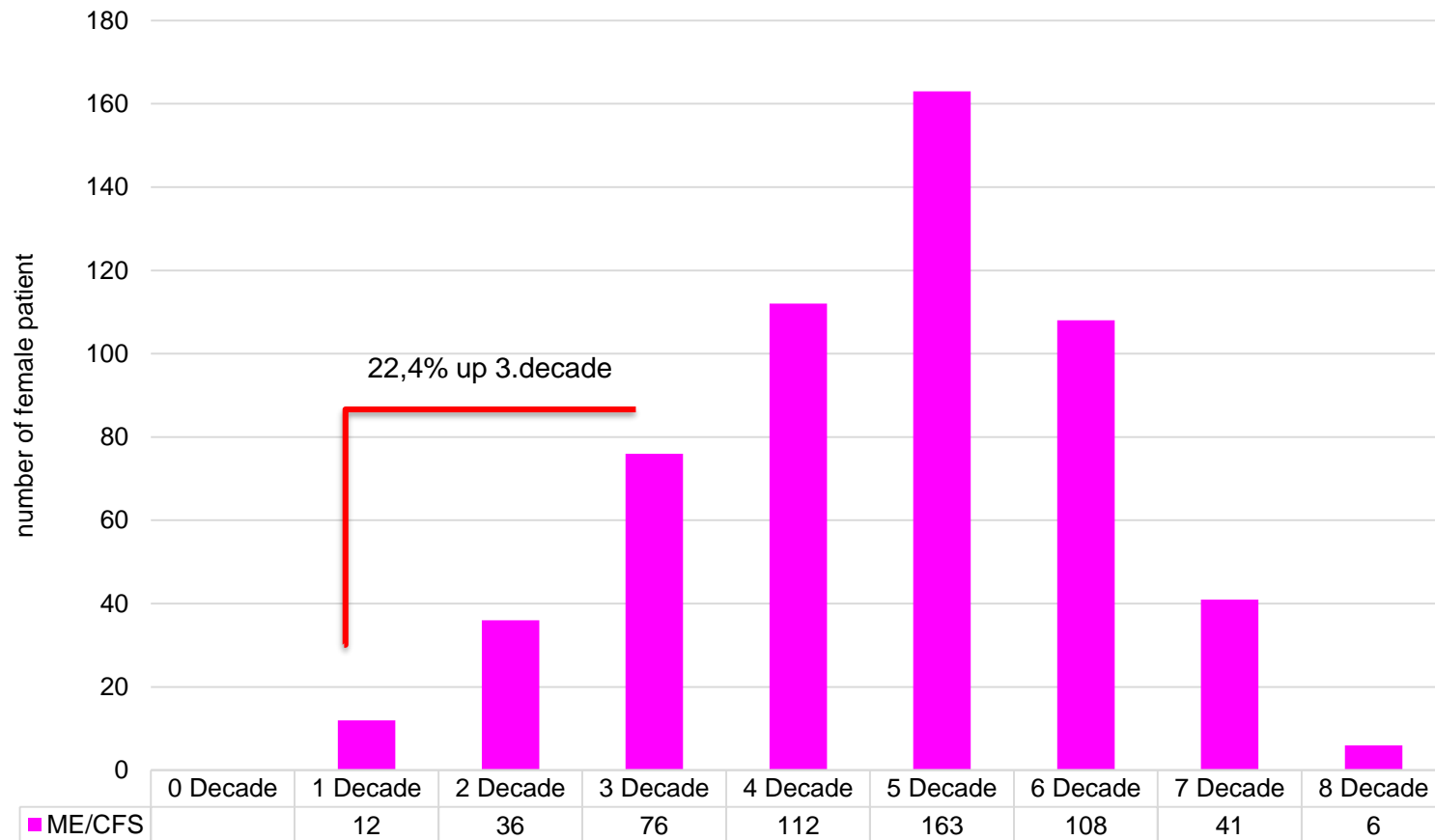


Features of Parameters of ME/CFS Patients :

General database (top on 1.1.2020):	1400 patients registered
Subgroup CFS/ME:	928 patients registered
Age female:	50, 6years; age male: 50,8 years
Body-mass-index:	female 23,1kg / m ² ; male: 24,6kg / m ²
Cerebropherese® treatment frequency/patient:	4
Treatment period:	214 days
Blood pressure/puls before Cerebropherese® :	141/70; 72/min
Blood pressure/puls after Cerebropherese® :	138/70; 70/min
Inoculations registered:	19/patient

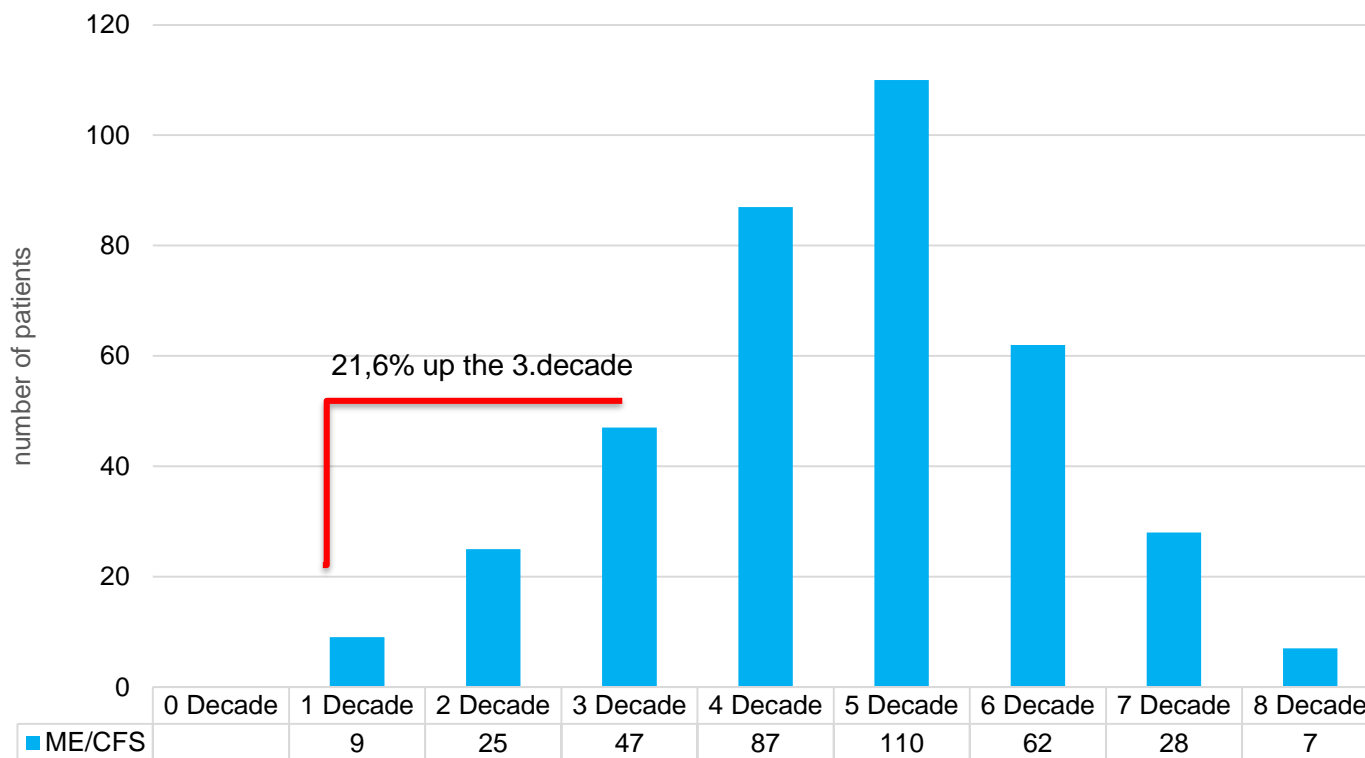


distribution of teh decades of life in female patients suffering ME/CFS



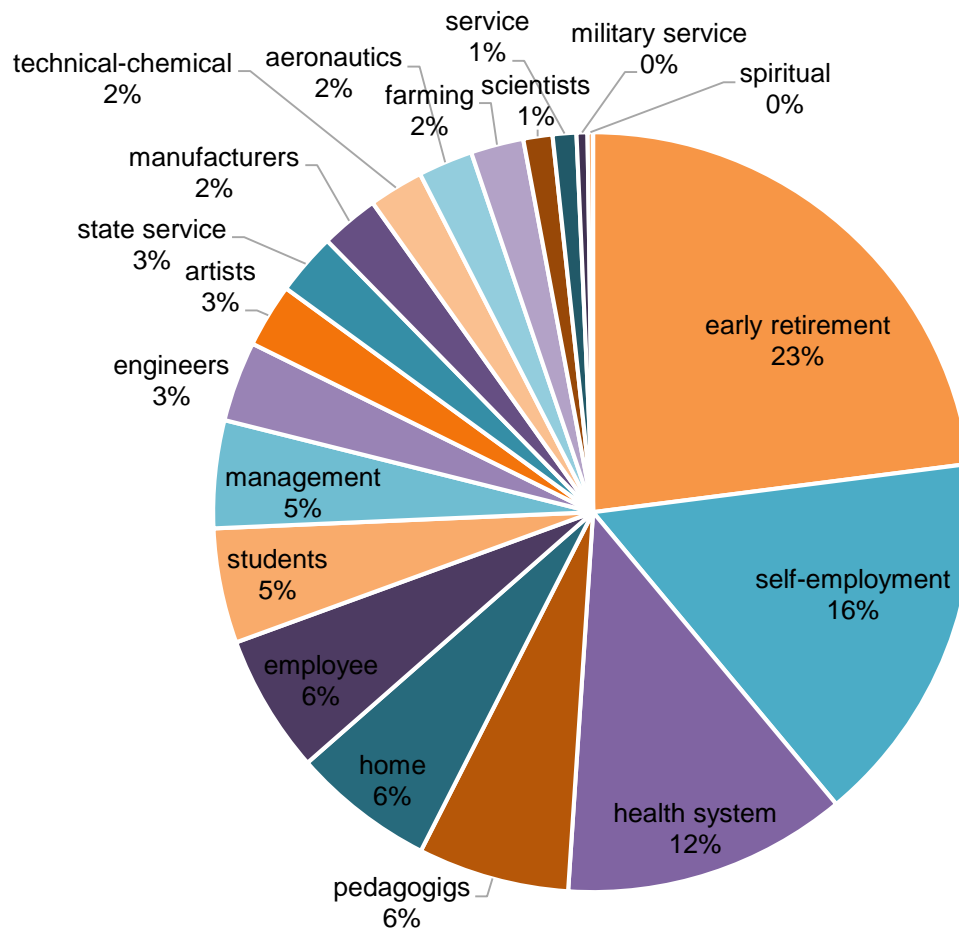


distribution of decades of life in men suffering ME/CFS



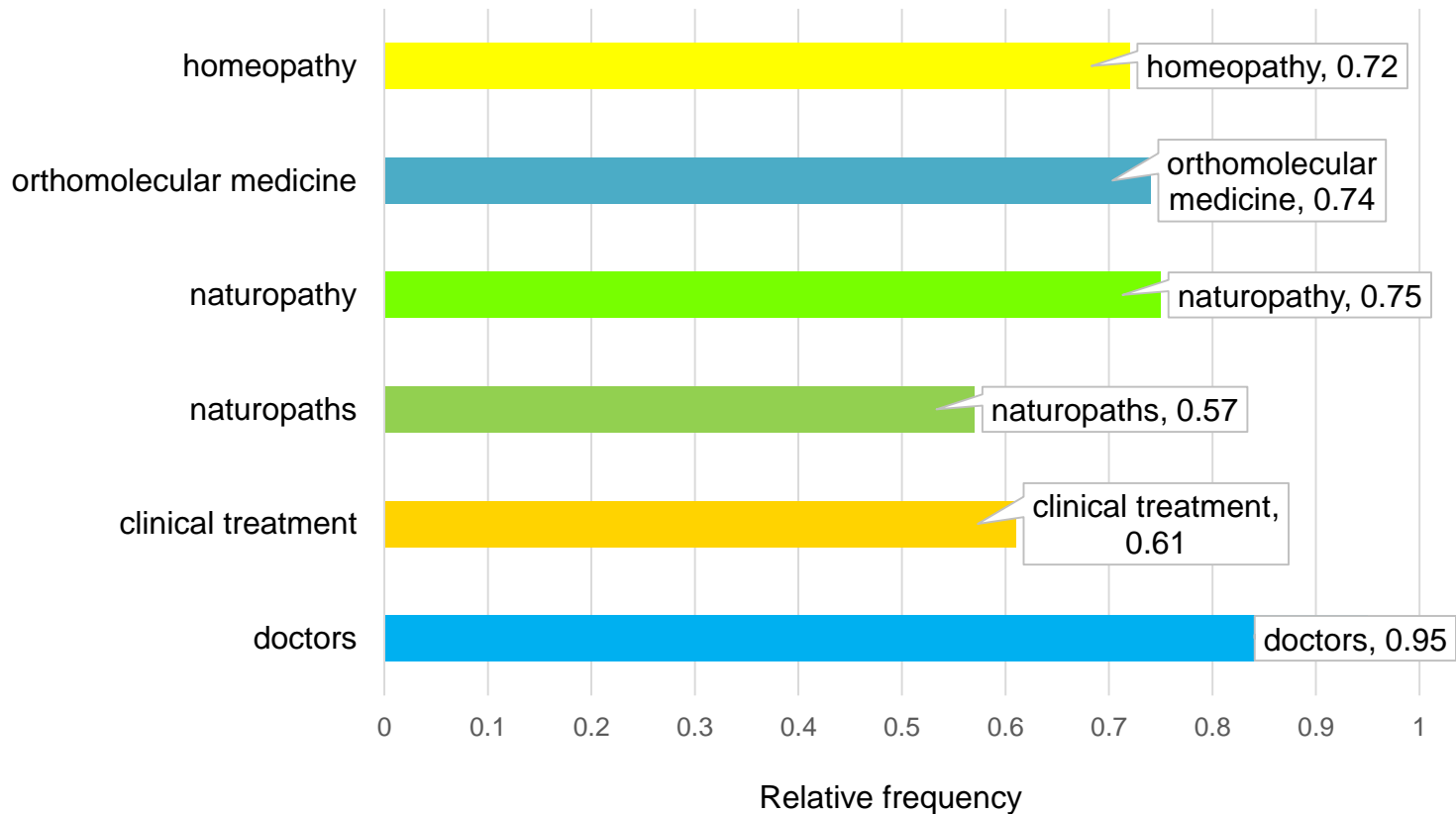


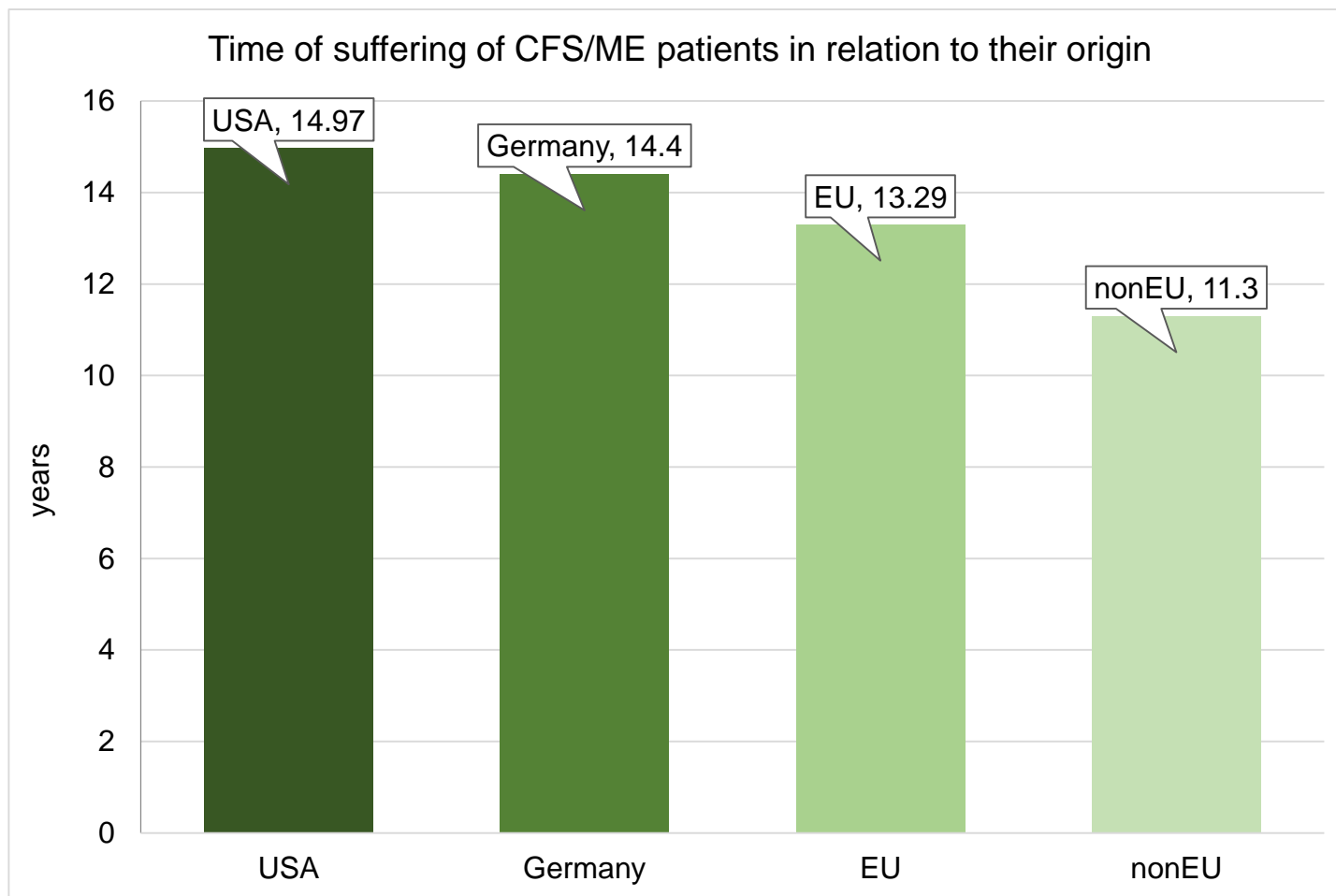
distribution of life situation and professions in patients suffering ME/CFS





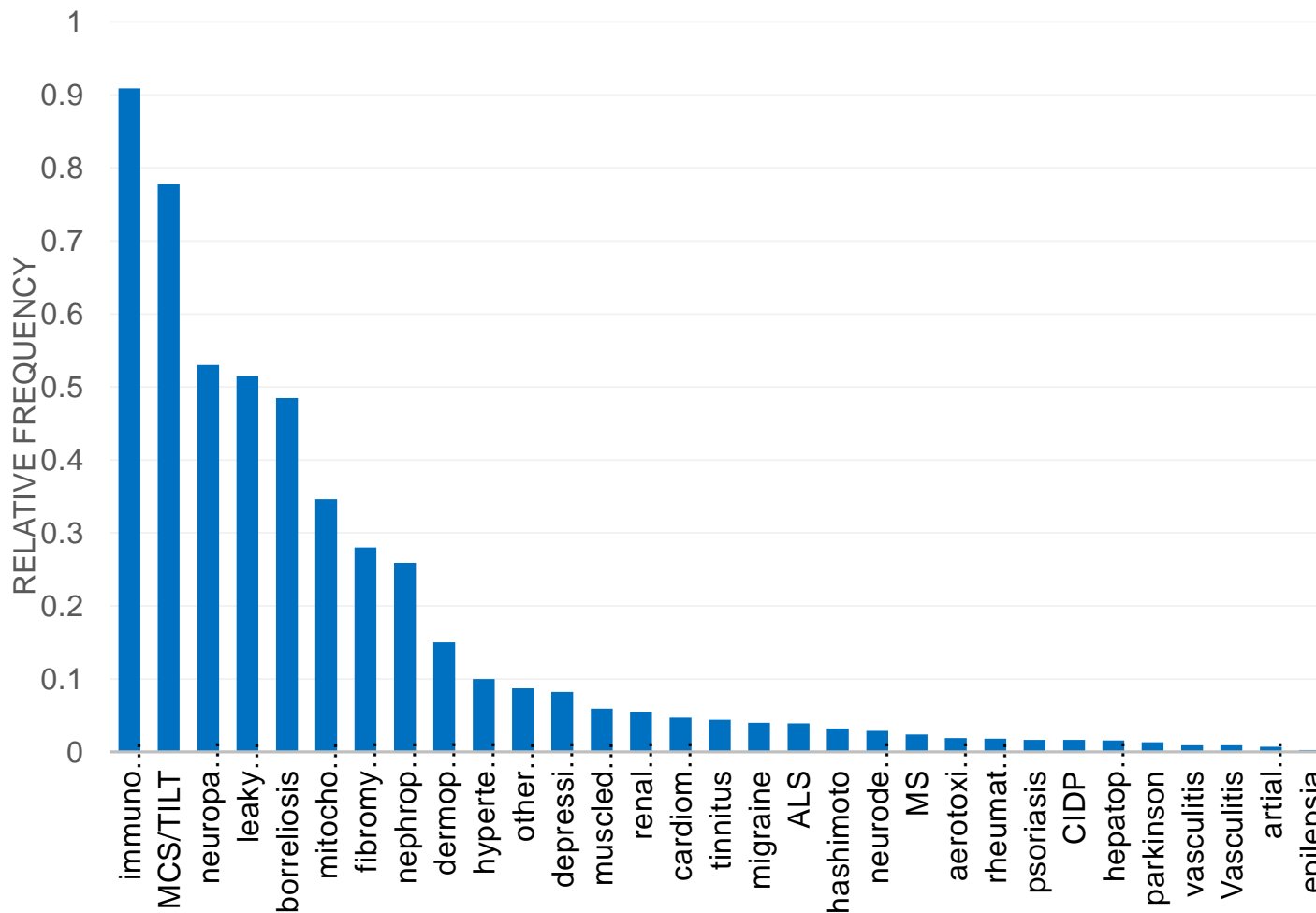
Pathways of suffering and treatment of CFS /MEpatients in the health systems





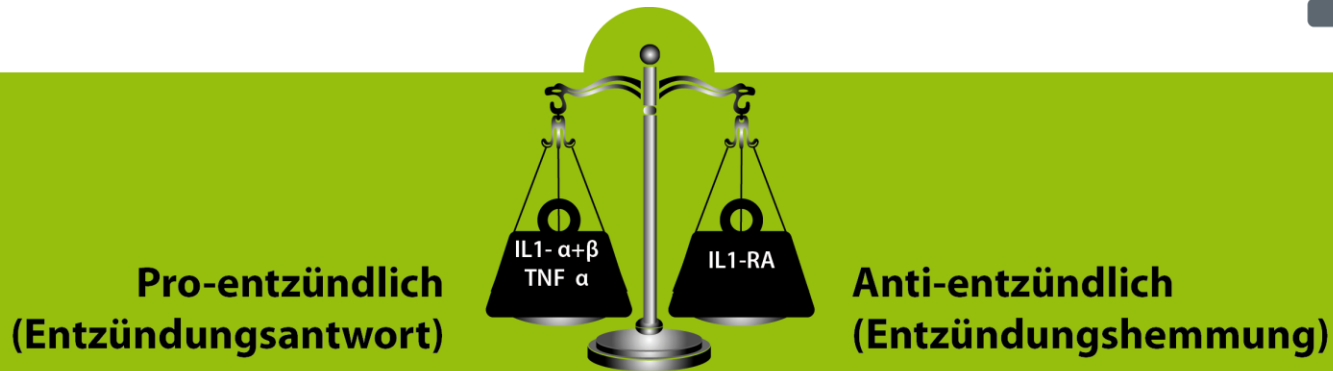


Distribution of relative frequencies in CFSME for comorbidities





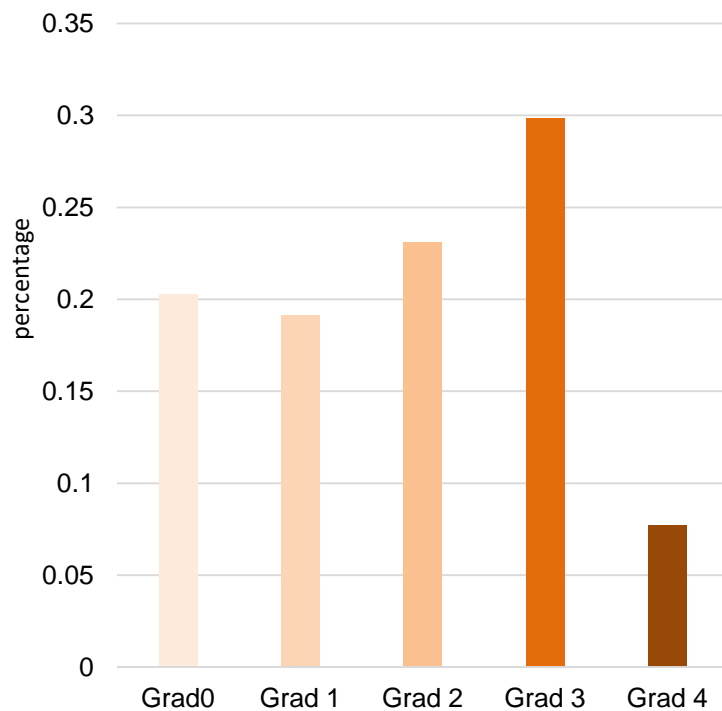
Inflammation features in CFS/ME



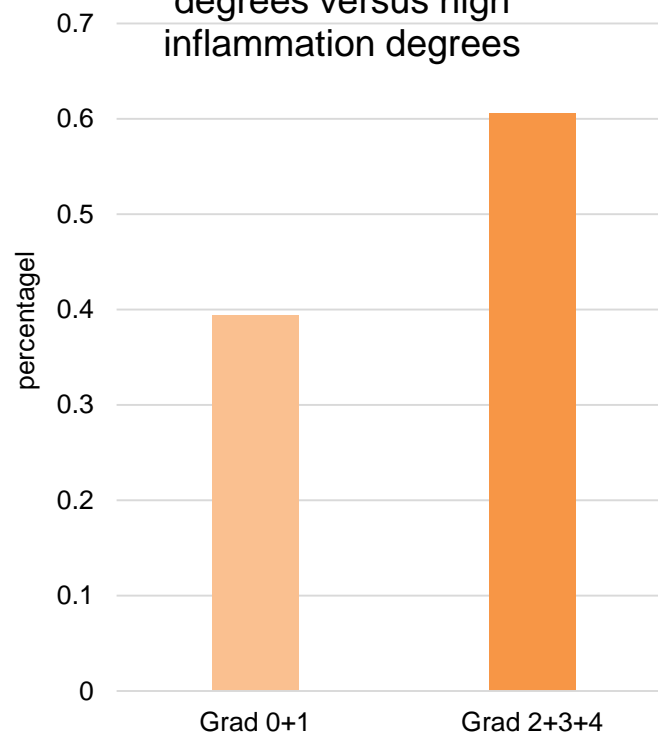
	IL1- α+β	TNF α	IL1RA	
Grad 0	↔	↔	↔	Normale Entzündungsreaktion (Normoresponder)
Grad 1	↔	↔	↑	leicht erhöhte Entzündungsreaktion
Grad 2	↑	↔	↔	mittelgradig erhöhte Entzündungsreaktion
	↔	↑	↔	
Grad 3	↔	↑	↓	stark erhöhte Entzündungsreaktion (high-responder)
	↑	↑	↔	
	↑	↔	↓	
Grad 4	↑	↑	↓	sehr stark erhöhte Entzündungsreaktion (high-responder)



distribution of genetic inflammation degree
in patients with CFS/ME

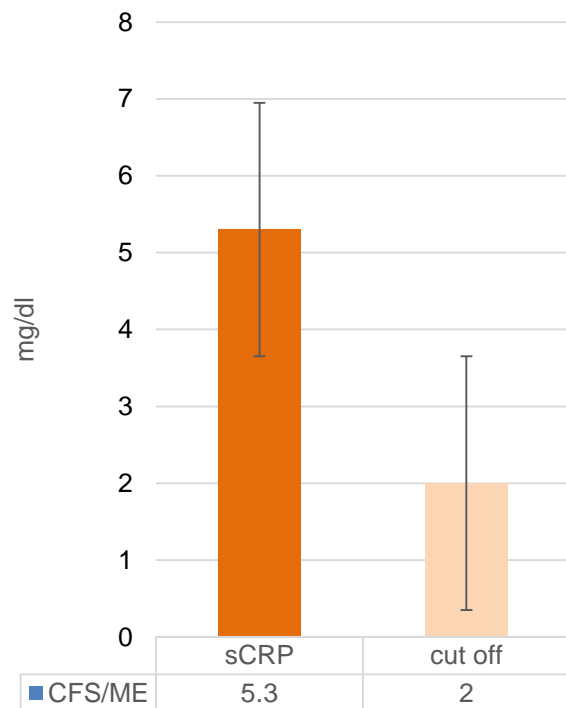


comprehension low inflammation
degrees versus high
inflammation degrees

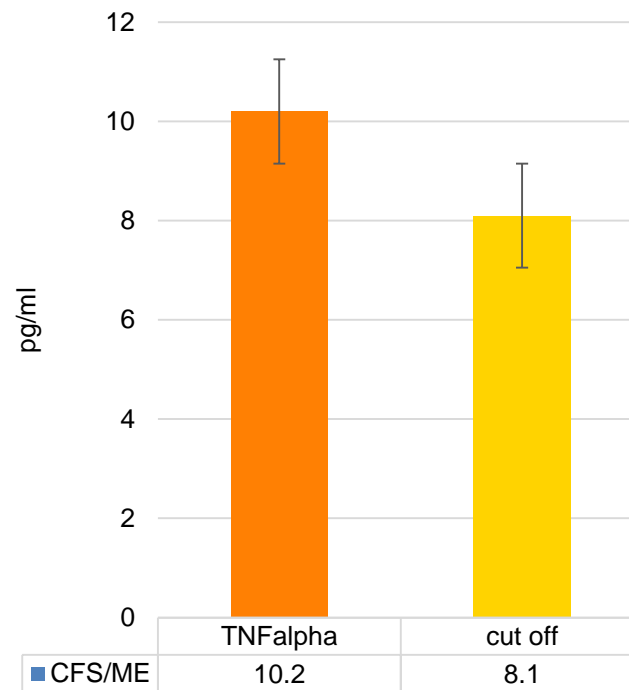




sCRP in patients suffering
CFS/ME

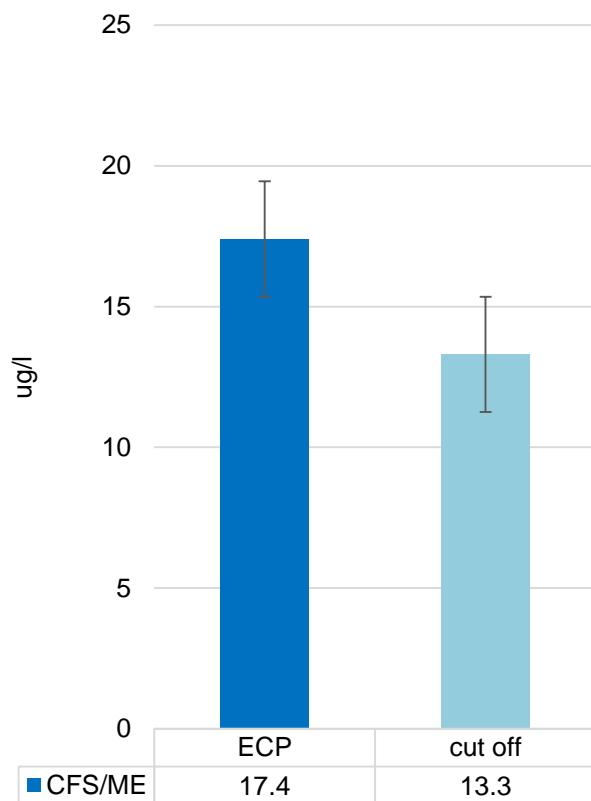


TNFalpha in patients suffering
CFS/ME

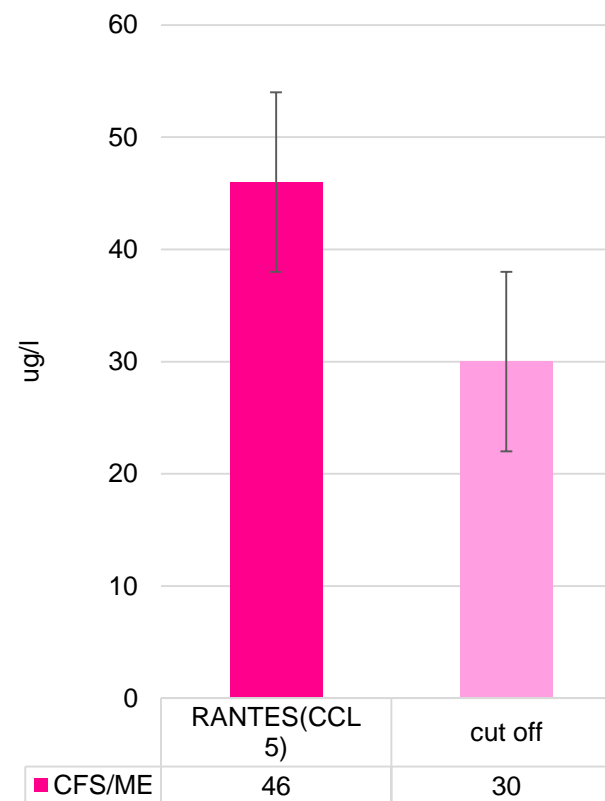




Eosinophilic cationic protein (ECP)
in patients suffering CFS/ME



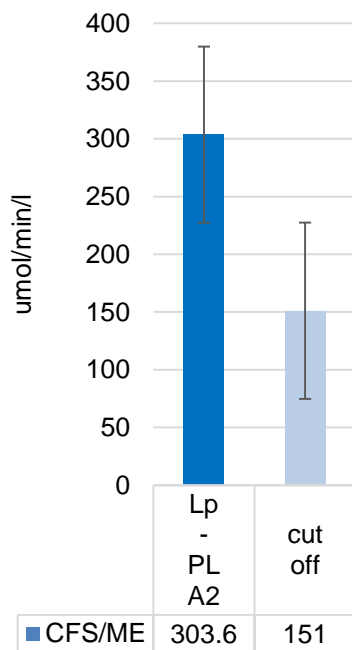
RANTES (CCL5) in patients
suffering CFS/ME



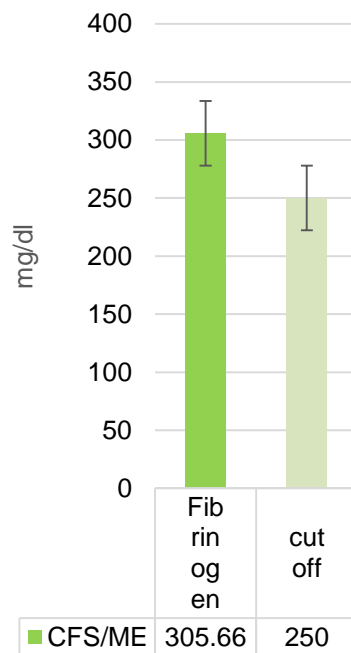


Endothelial Inflammation and Rheology in patients suffering CFS/ME

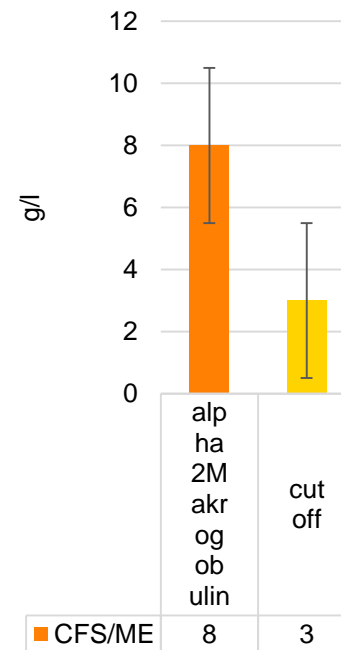
endothelial inflammation represented by Lp-PLA2 in patients suffering ME/CFS/ME



Fibrinogen as an inflammation and rheological marker in endothelial inflammation in patients suffering CFS/ME

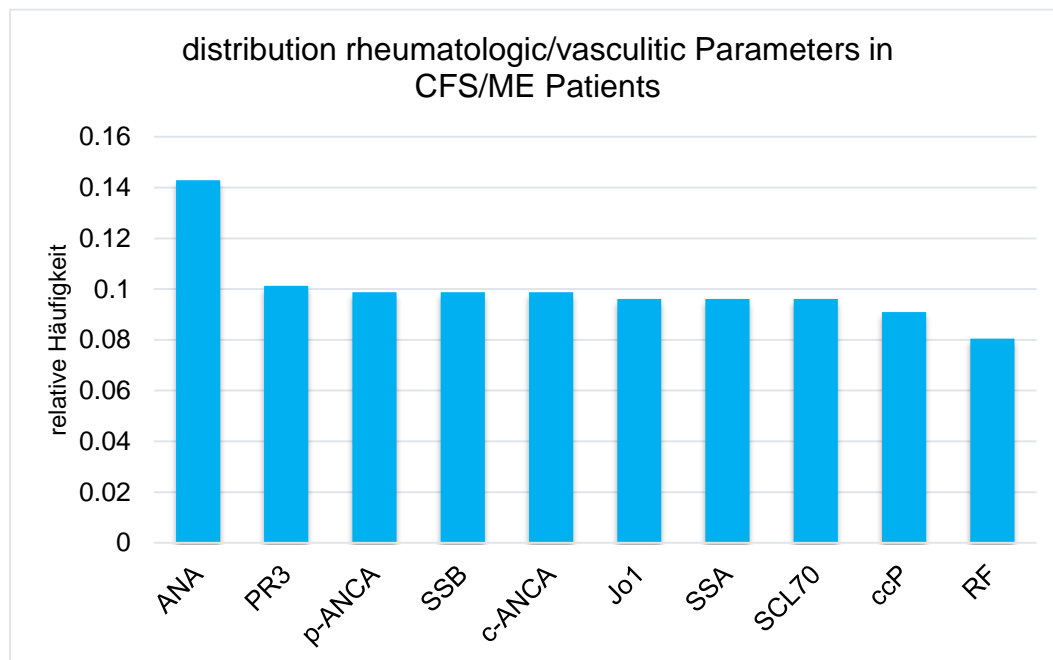


alpha2Makroglobulin as an inflammation and rheological marker in endothelial inflammation in patients suffering CFS/ME





Immunological Features in patients suffering CFS/ME

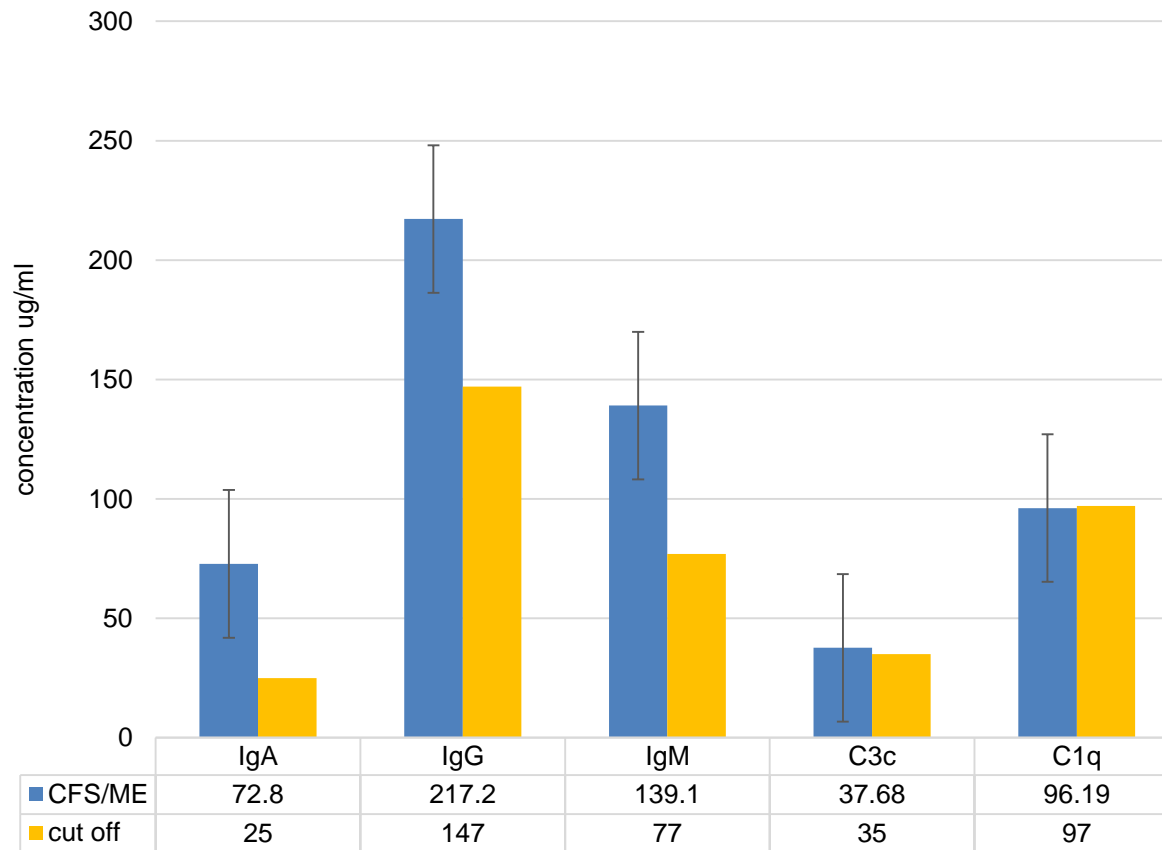


cCP:	1:53 (cut off < 1,0)
ANA (Antinucleare Antibodies):	1:323 (cut off < 1:100)
RF (Rheumafactor):	6,5 8 (cut off < 14IU/ml)
P-ANCA*:	60 U/ml (cut off < 5U/ml)
c-ANCA*:	38 U/ml (cut off < 10U/ml)
SCL70-Antibodies:	1:37 (cut off negativ)

(*ANCA = Anti-Neutrophile cytoplasmatic antibodies)

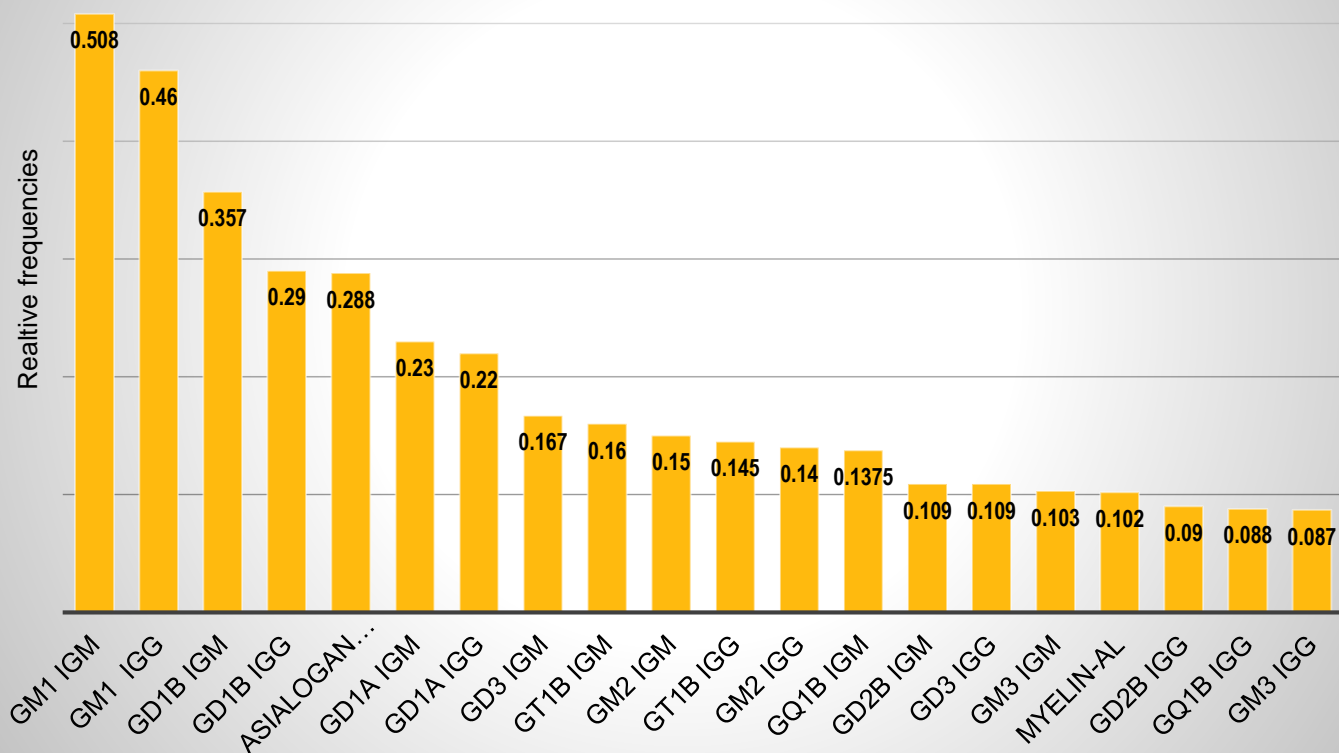


Distribution and Concentration of Circulating Immune Complexes (CICs) Patients with CFS/ME



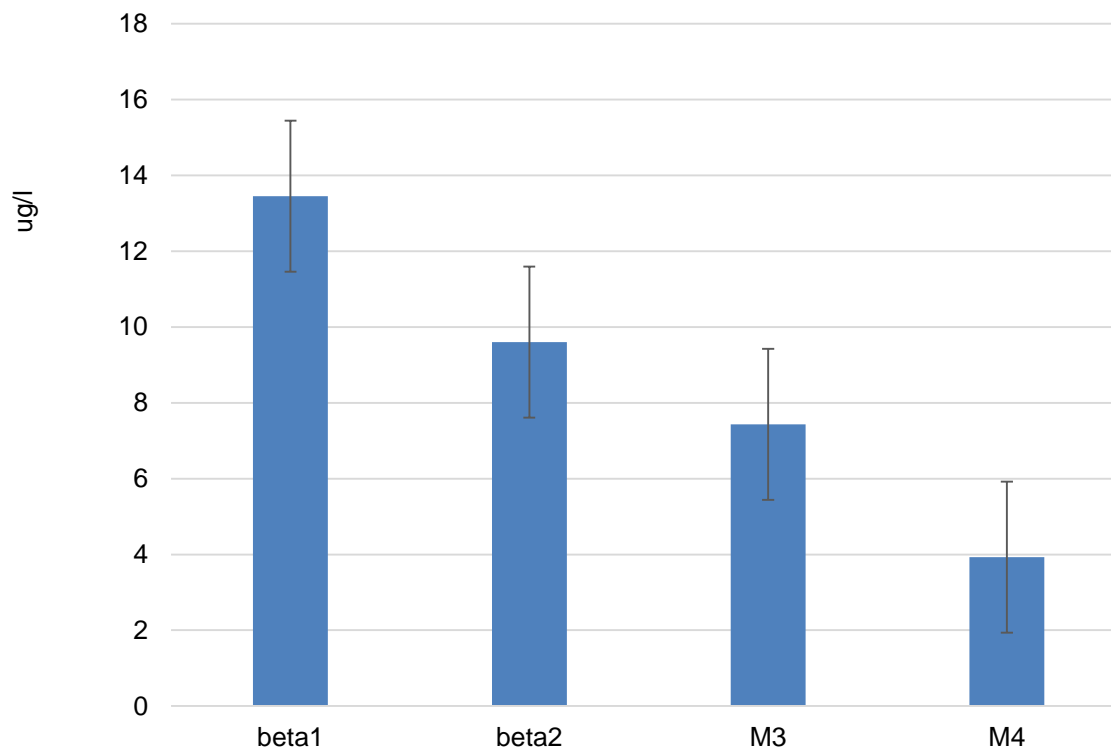


Distribution of relative frequencies of irregular Gangliosid-Antibodies in CFS/ME Patienten



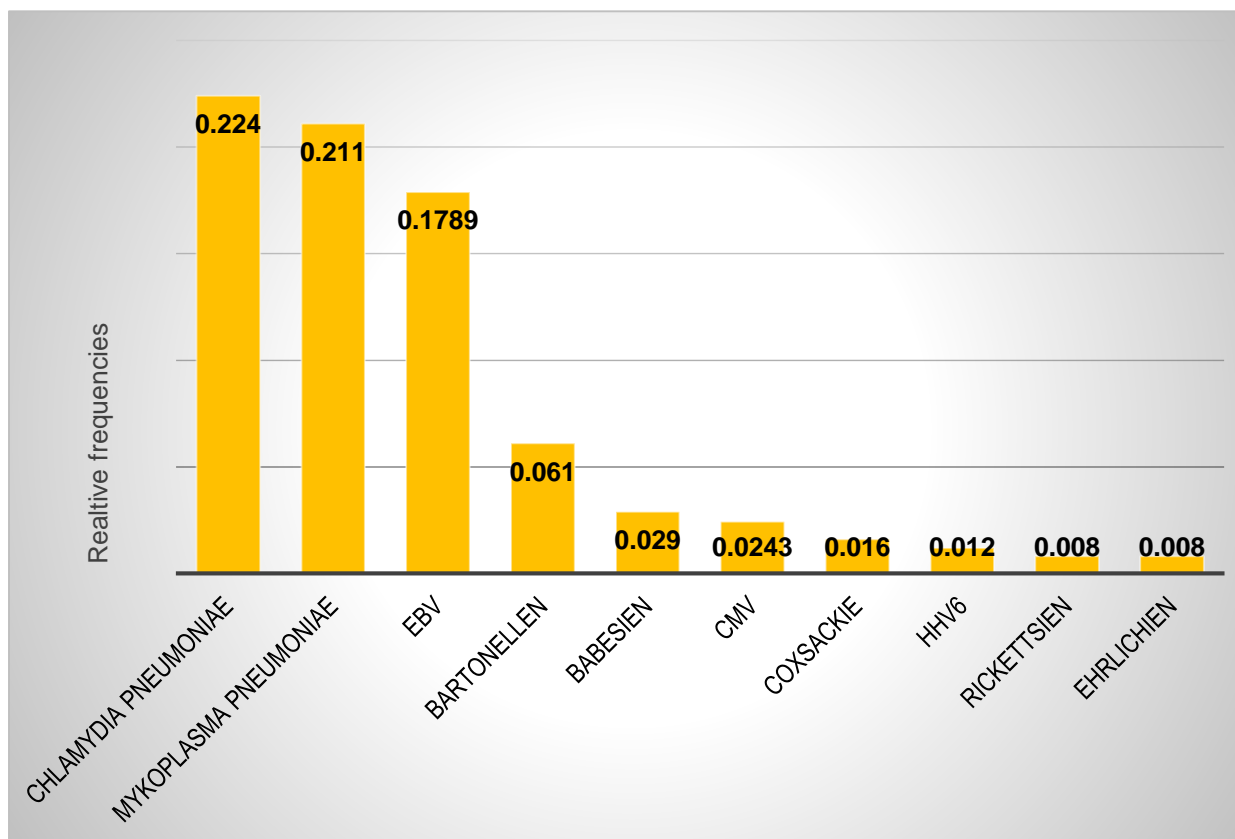


Neurotransmitter-Aut-Antibodies against beta1 und beta 2 adrenerge receptors, and muskaric Type 3 und Type 4 acetylcholinrezeptors





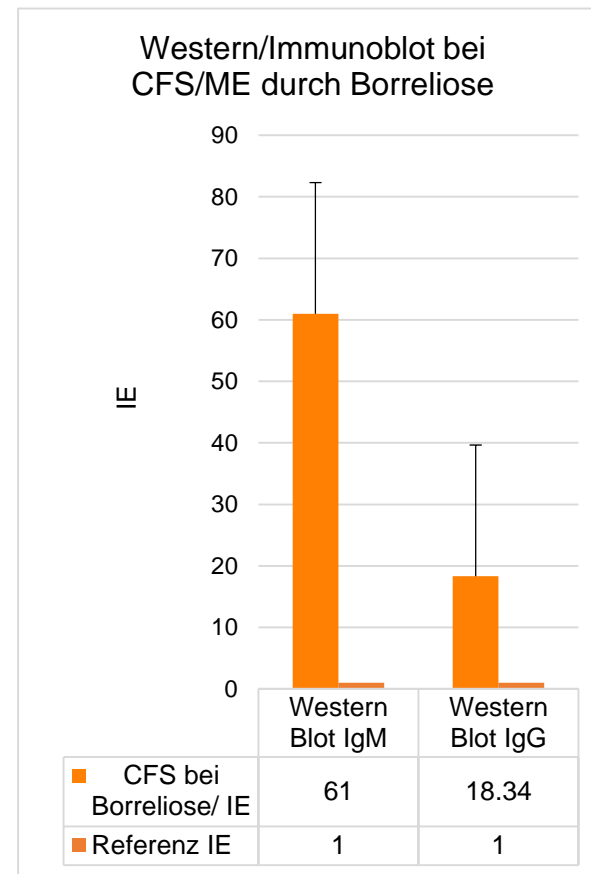
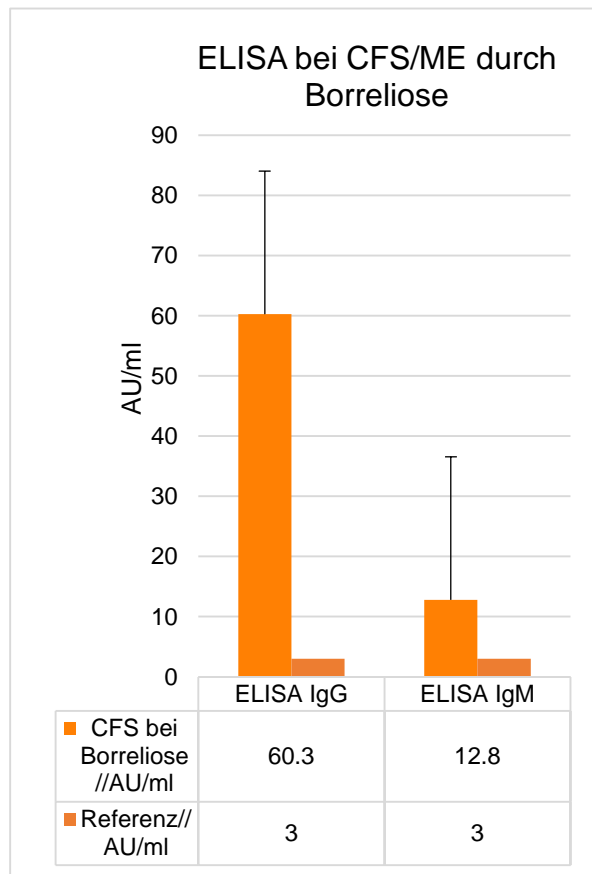
CFS/ME and chronic infection diseases an important aspect in diagnostics and Treatment findings in the INUS Study and current new aspects





CFS/ME and chronic infection diseases an important aspect in diagnostics and treatment findings in the INUS Study and current new aspects

The 1.st differential diagnosis: Borreliosis

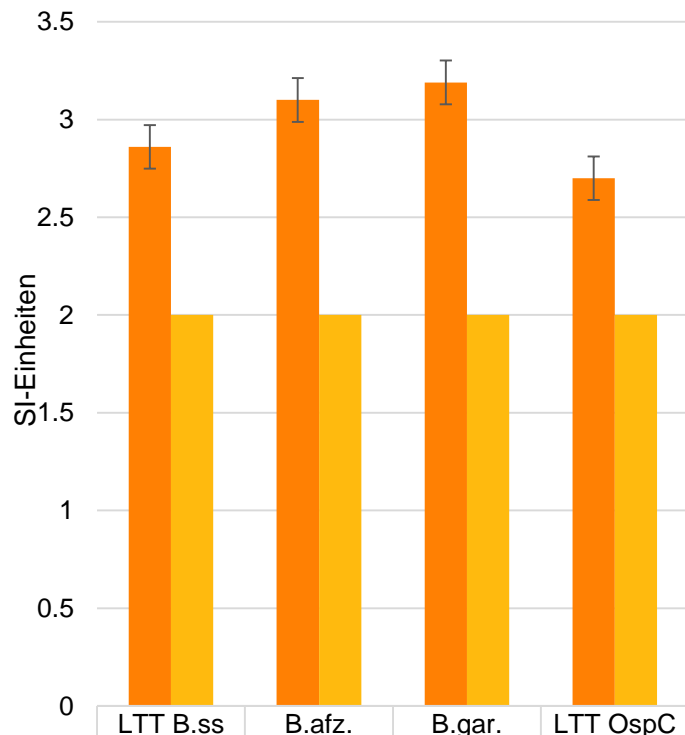




CFS/ME and chronic infection diseases an important aspect in diagnostics and treatment findings in the INUS Study and current new aspects:

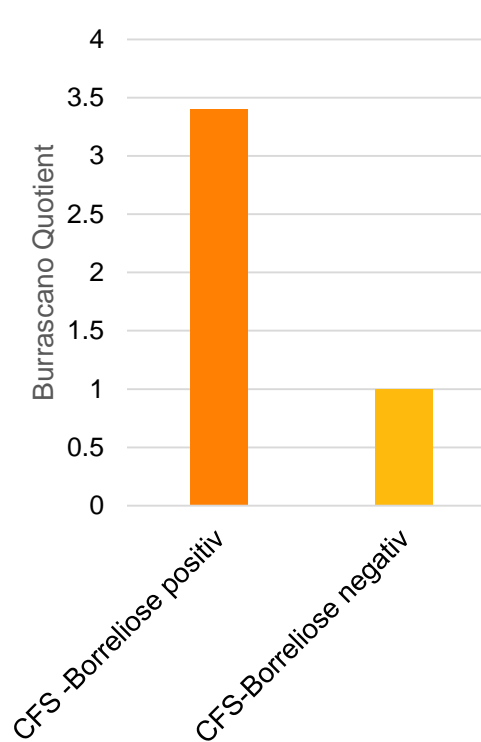
the 1.st differential diagnosis in CFS/ME: Borreliosis (61,3% of all CFS/ME patients !!)

Muster des LTT Borreliose bei CFS/ME



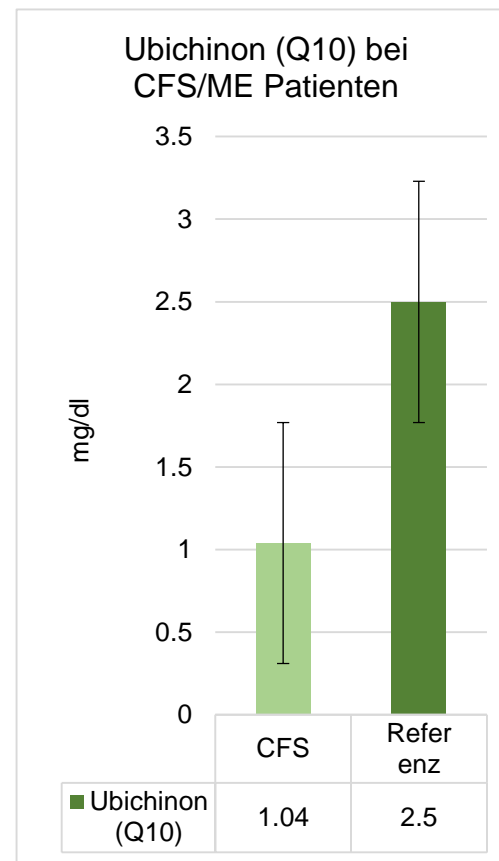
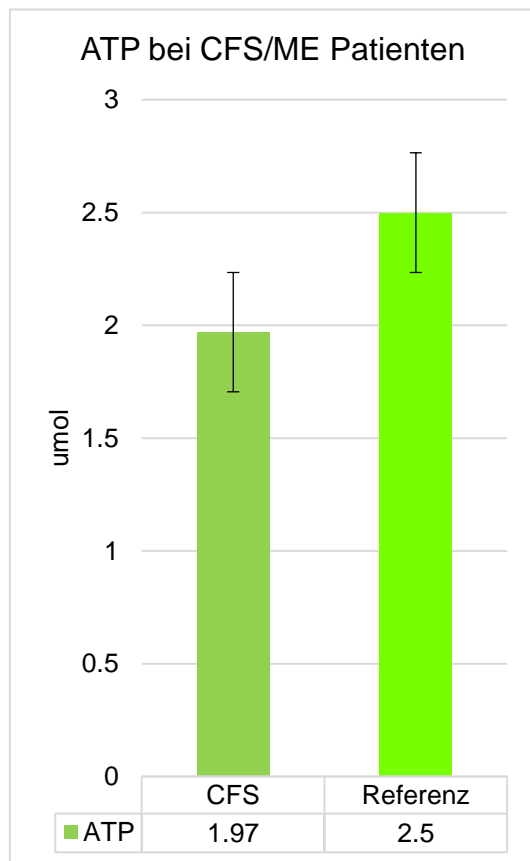
Borreliose bei CFS/ME	2.86	3.1	3.19	2.7
Referenz /SI	2	2	2	2

Burrascano Score bei CFS/ME Patienten mit später nachgewiesener chronischer Borreliose



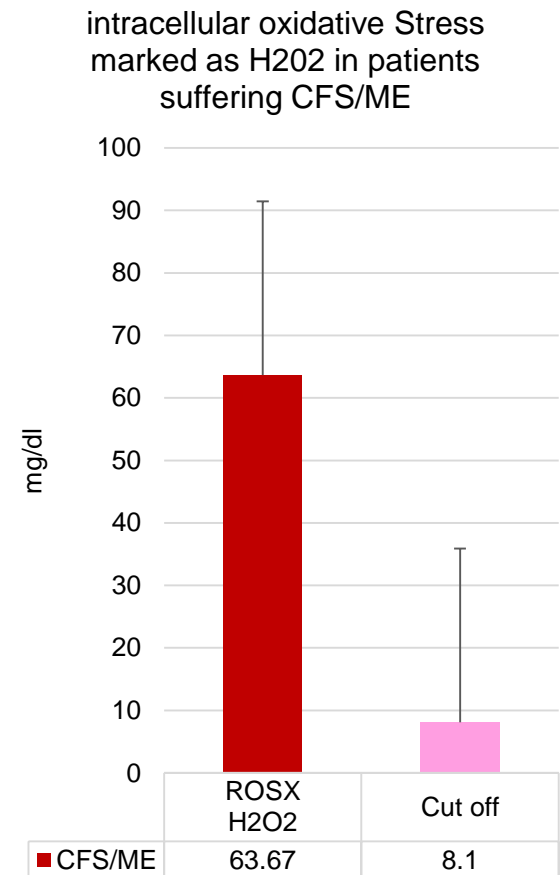
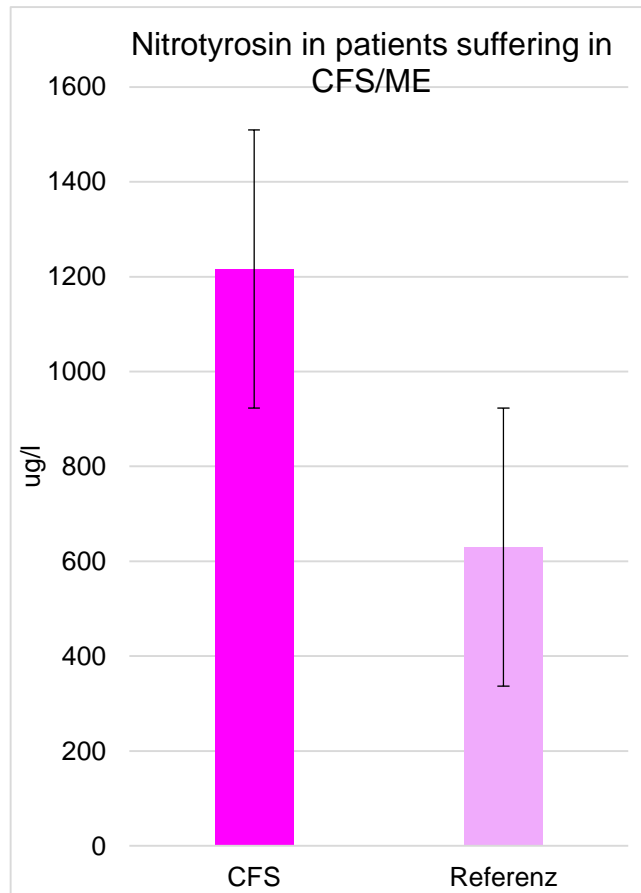


CFS/ME and the mitochondrial metabolic disorders



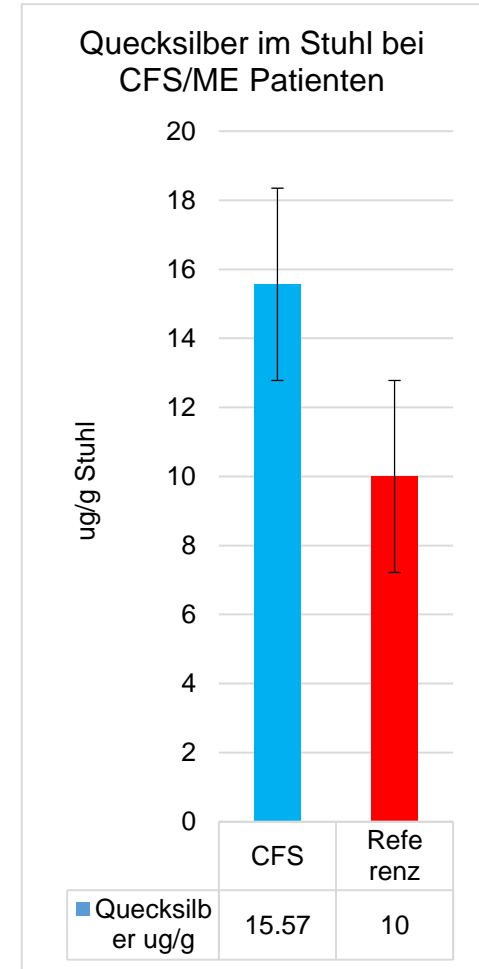
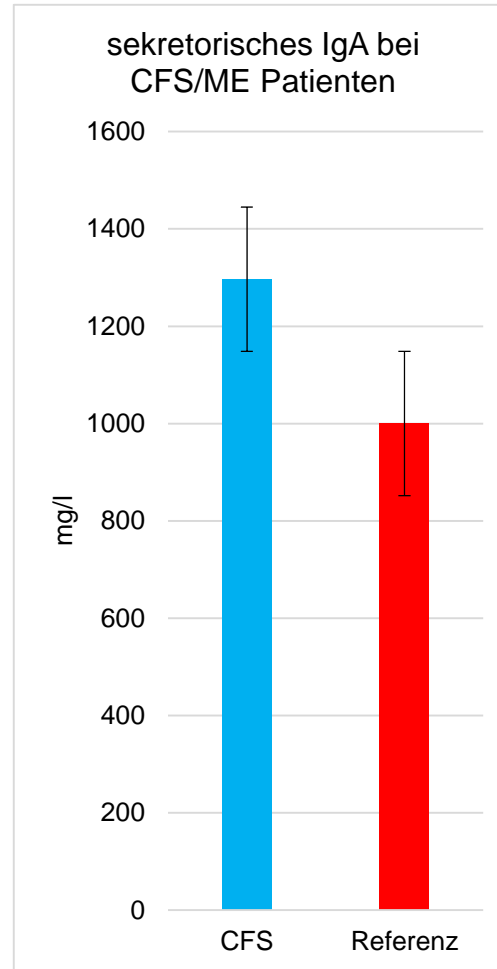
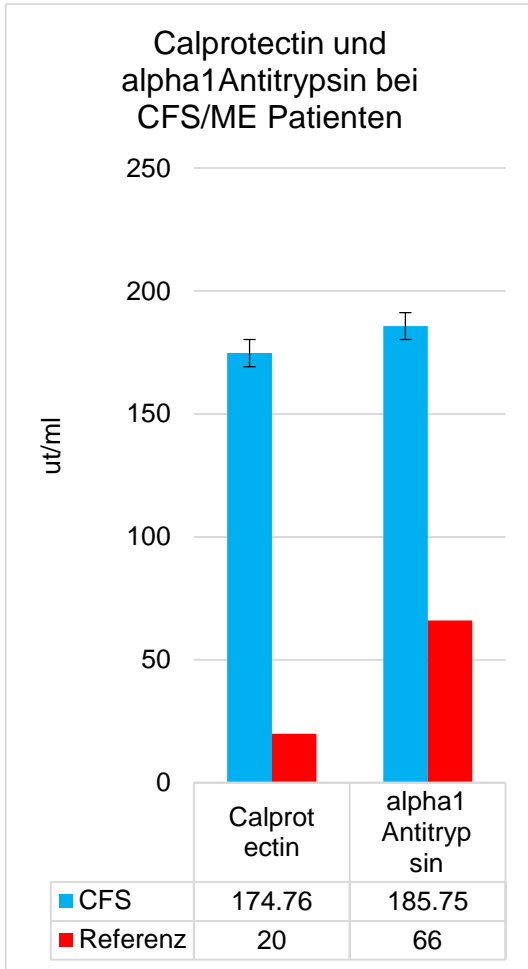


CFS/ME and the mitochondrial metabolic disorders



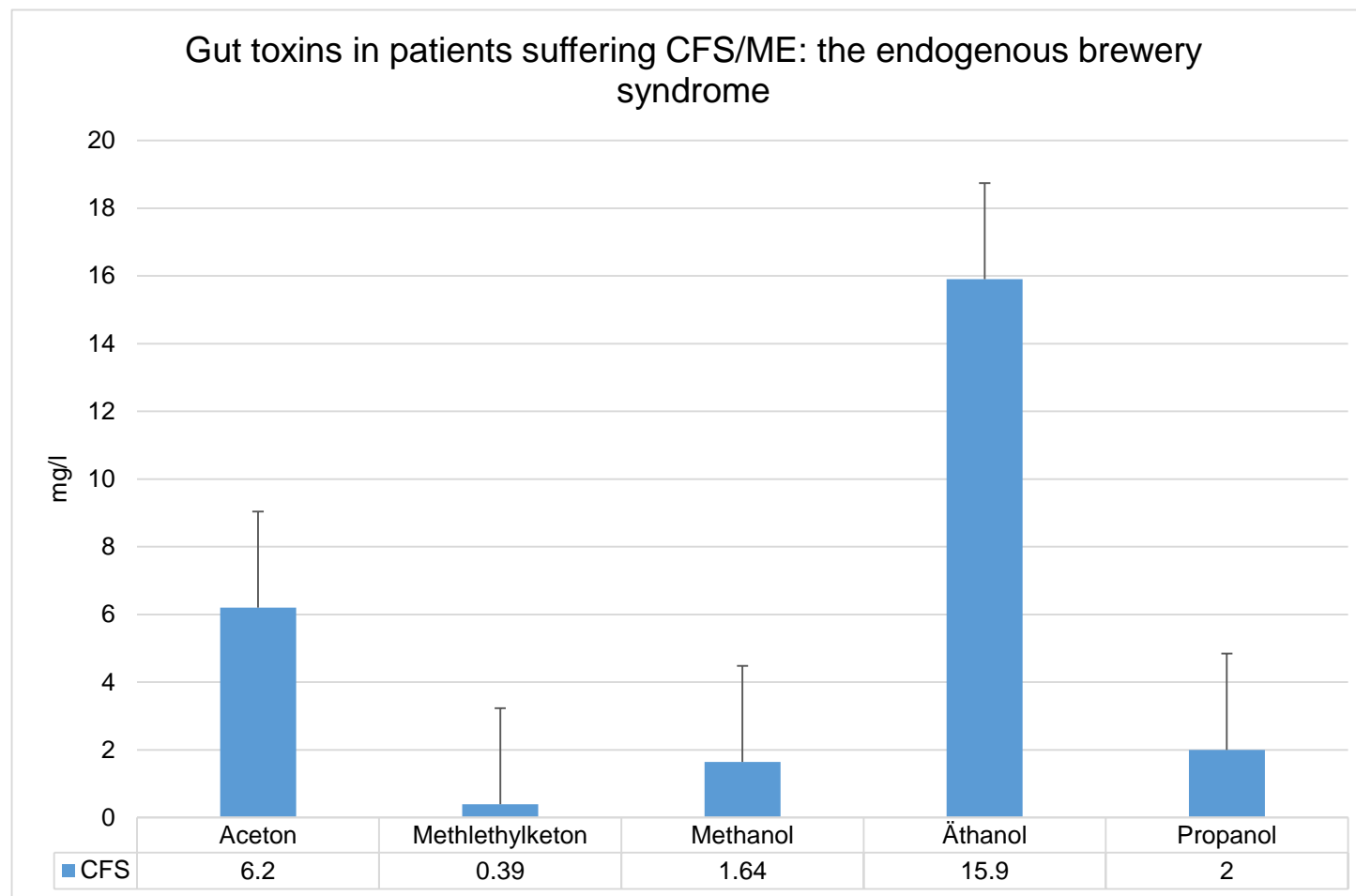


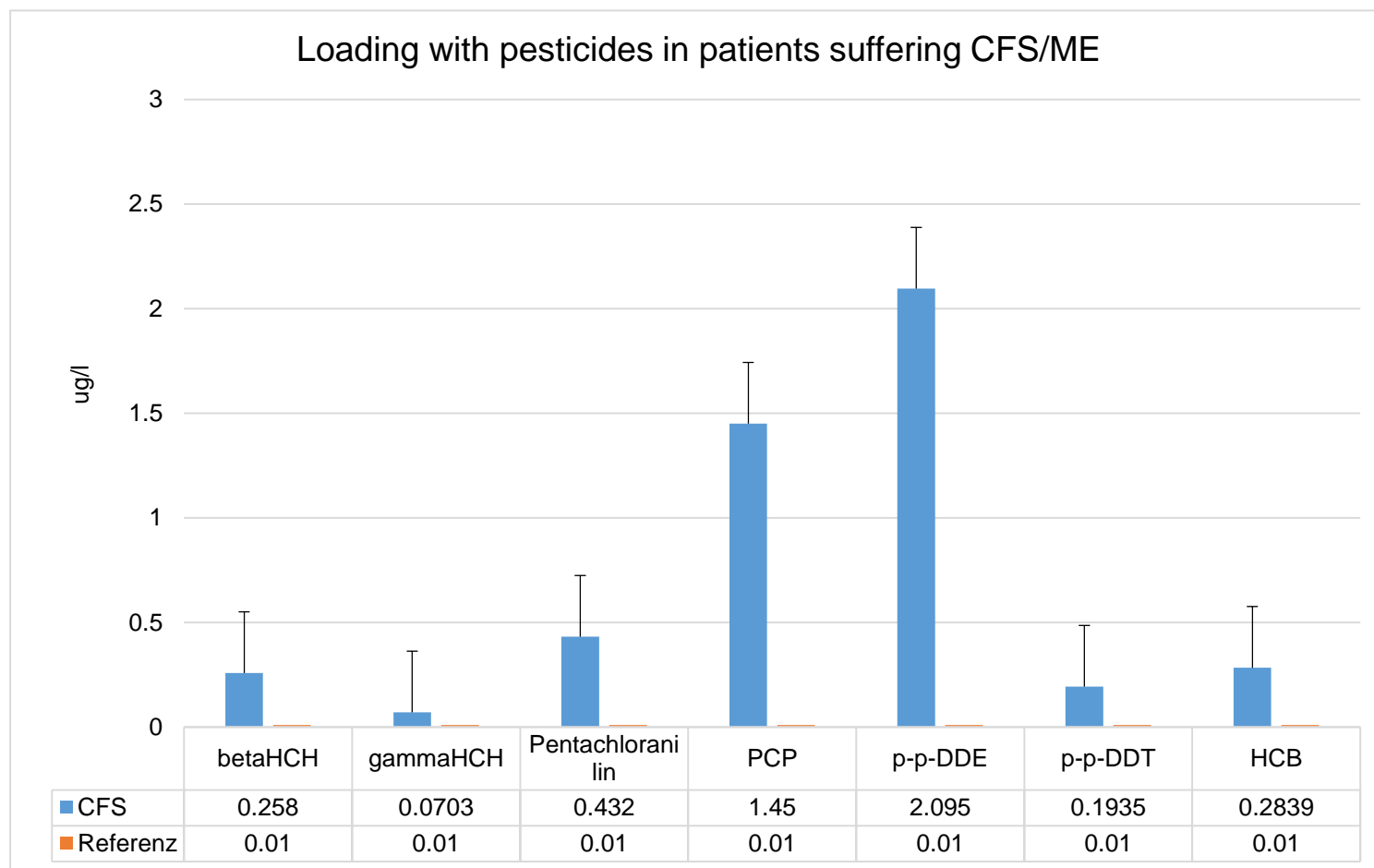
CFS/ME and the gut dysfunction

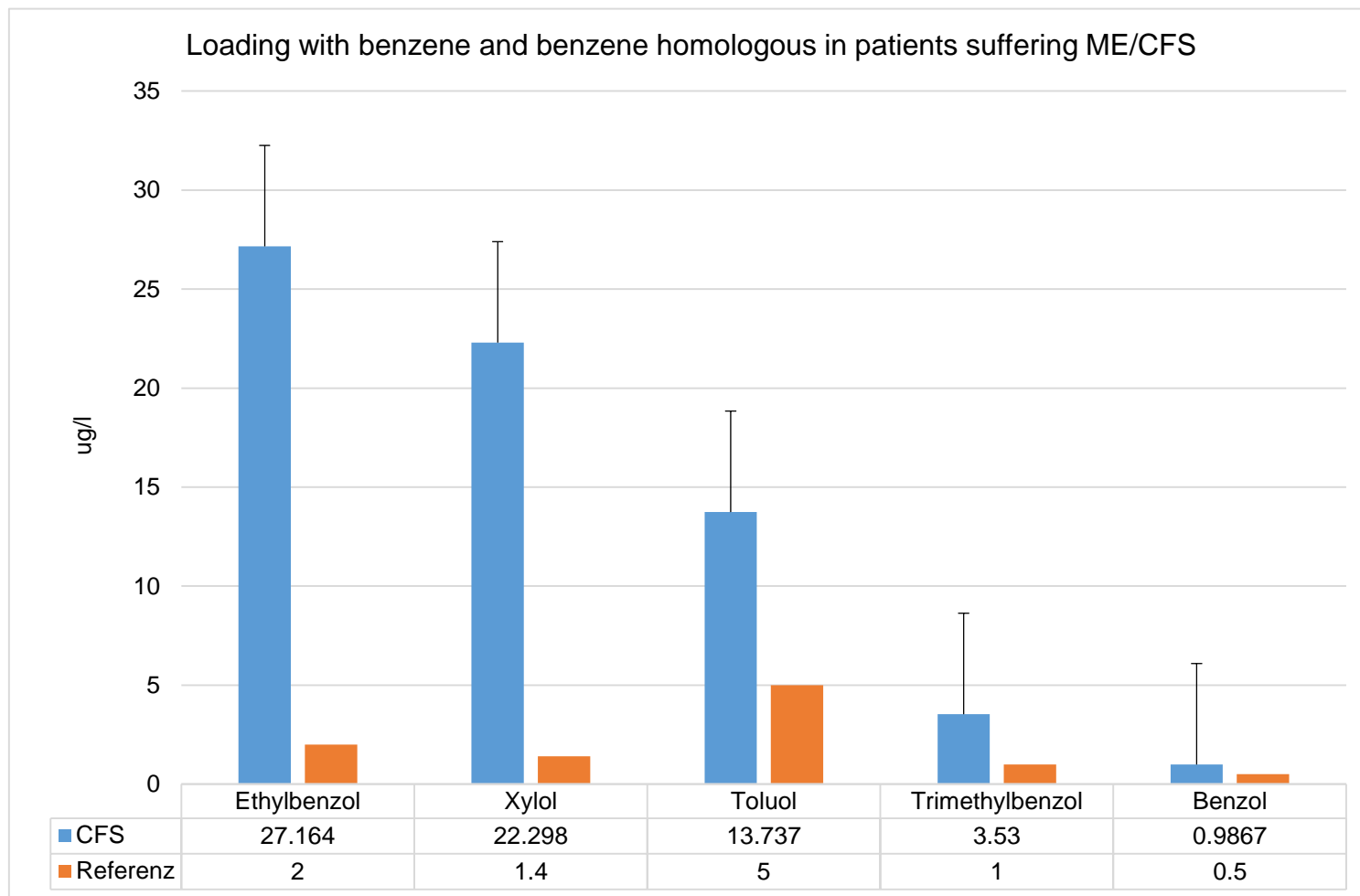




CFS/ME and the gut dysfunction

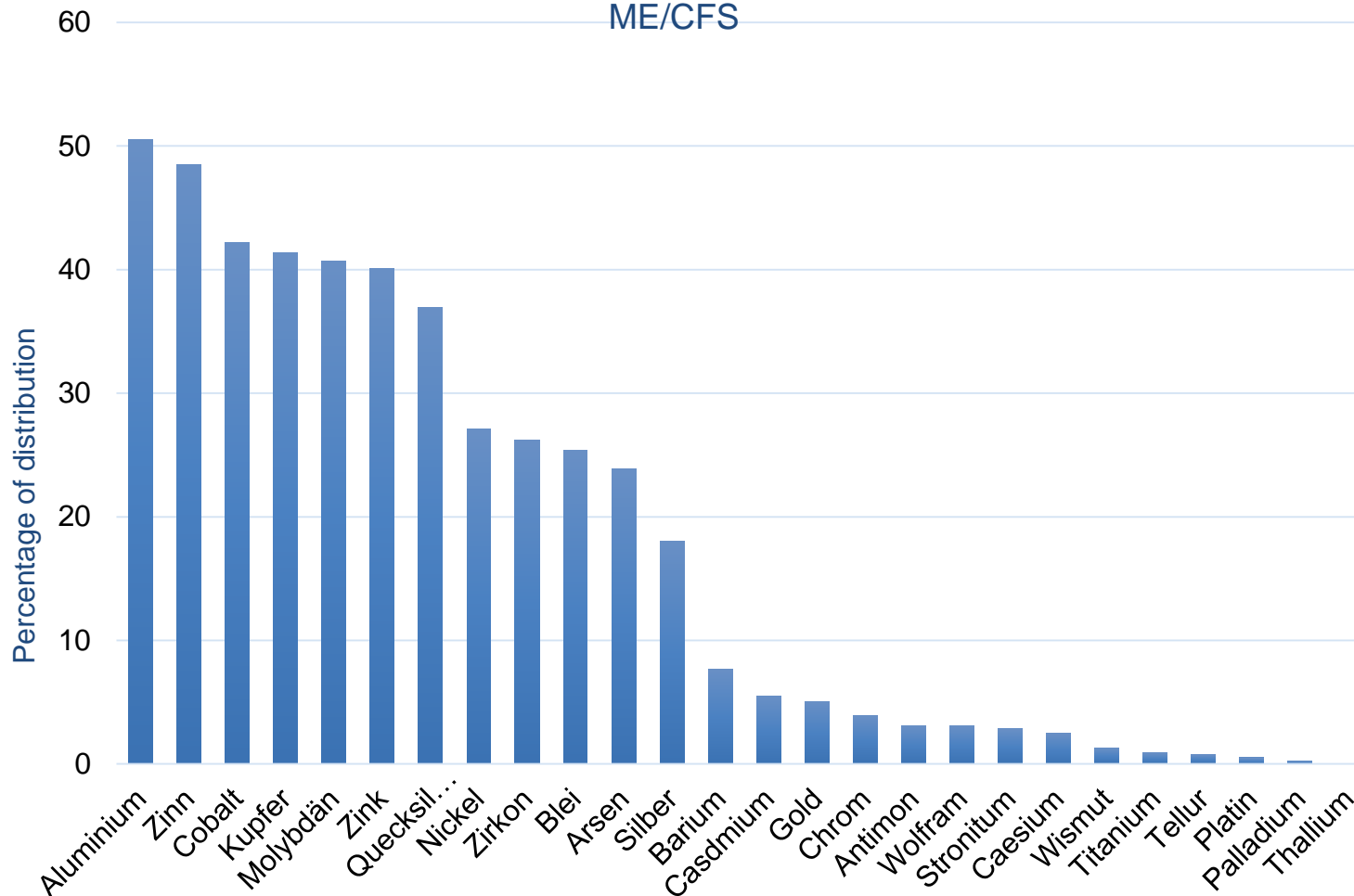






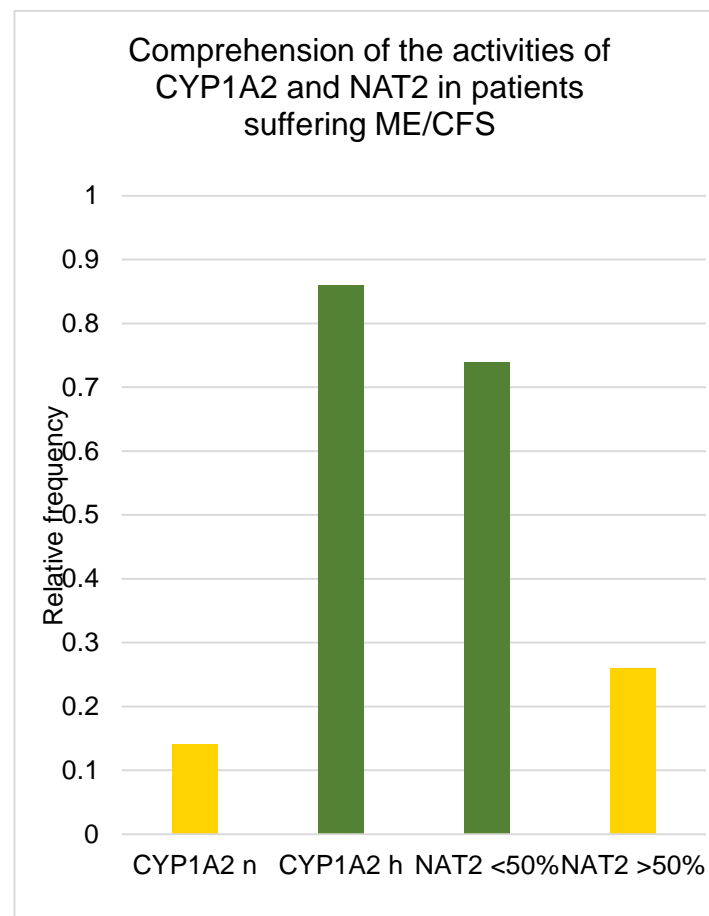
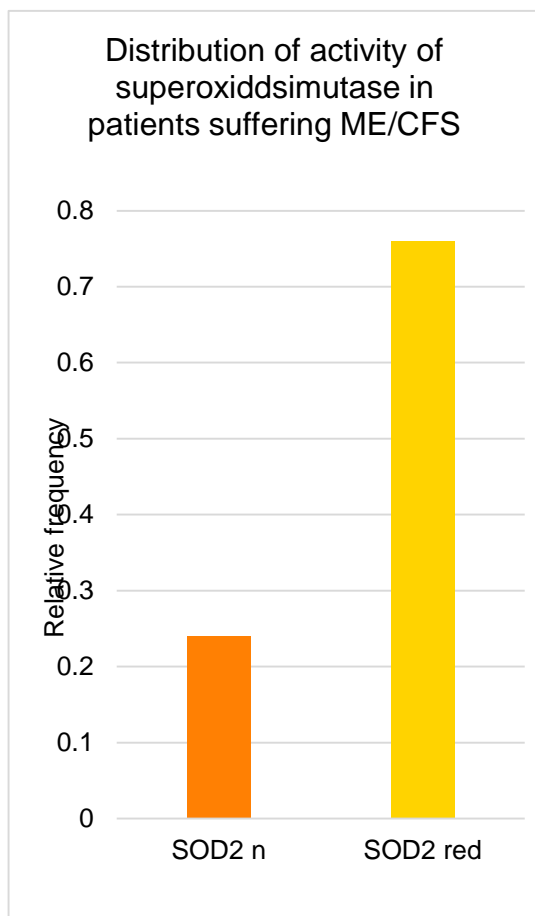


Distribution of heavy metals in INUSpheresis®-eluate in patients suffering ME/CFS



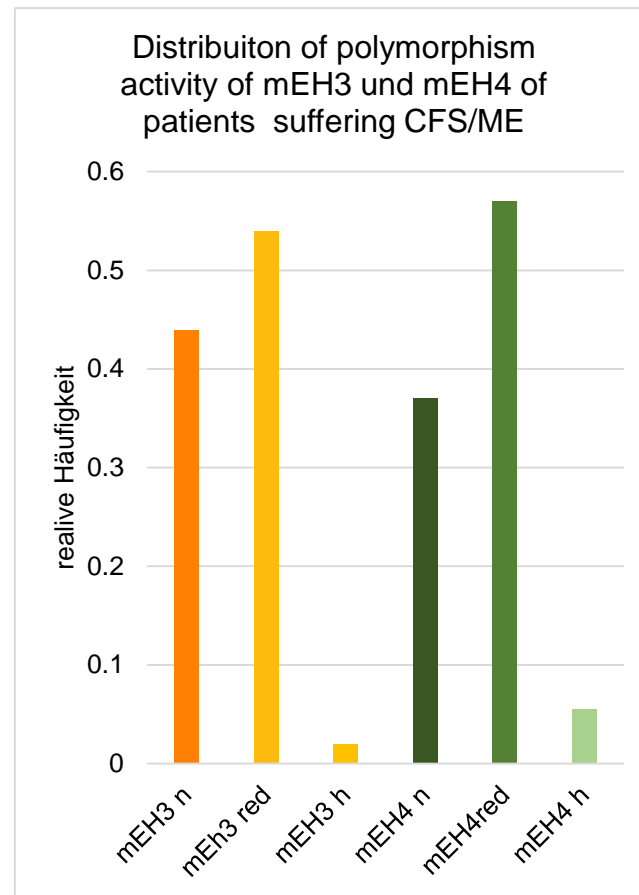
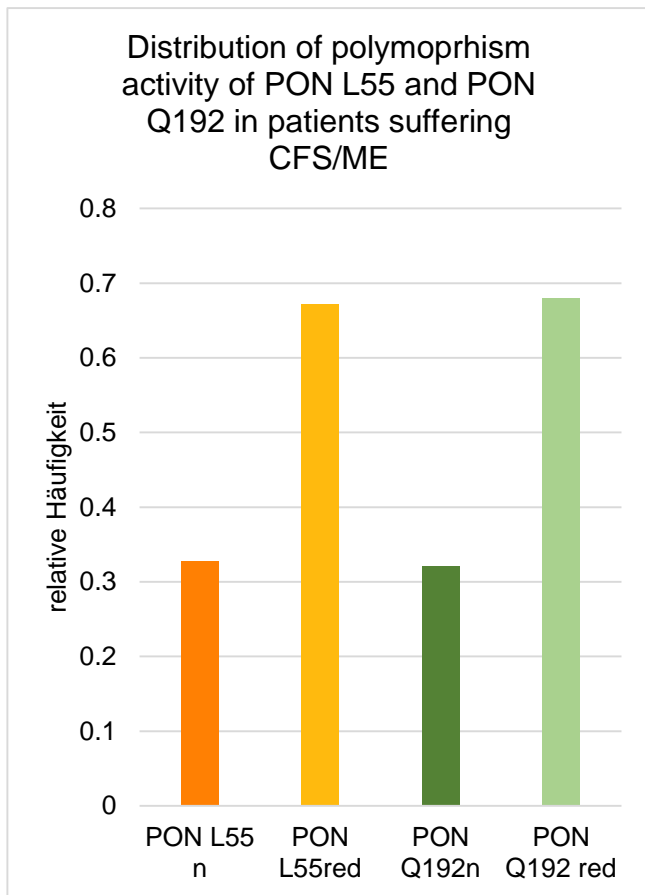


Features of genetic disturbances in cellular detoxification for (environmental)-toxins Superoxid-dismutase (SOD2), Cytochrome P450 Typ 1A2 , N-Acetyltransferase



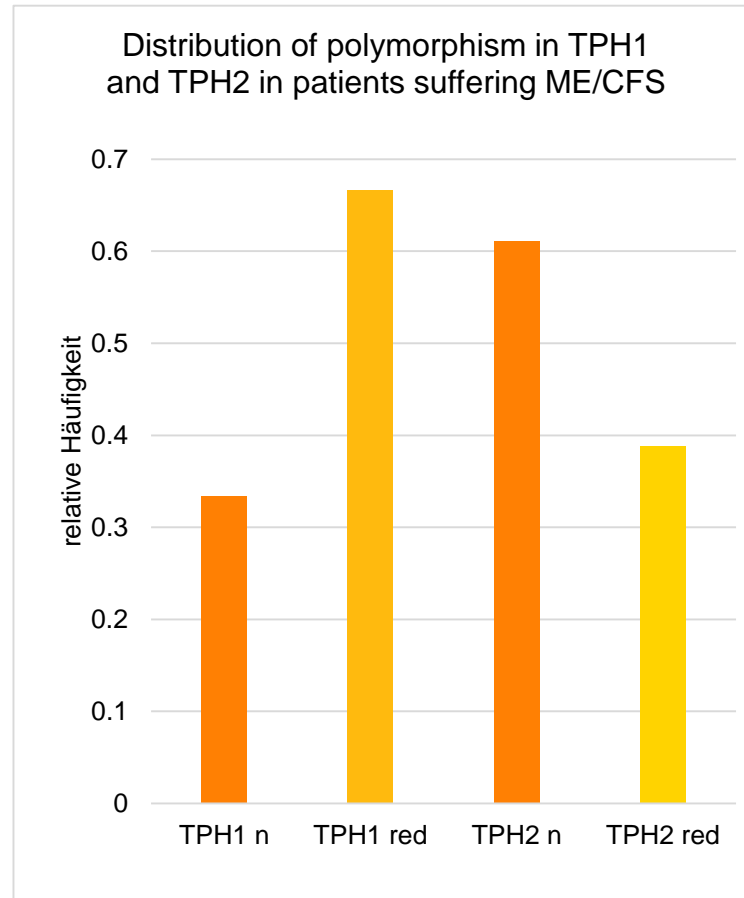
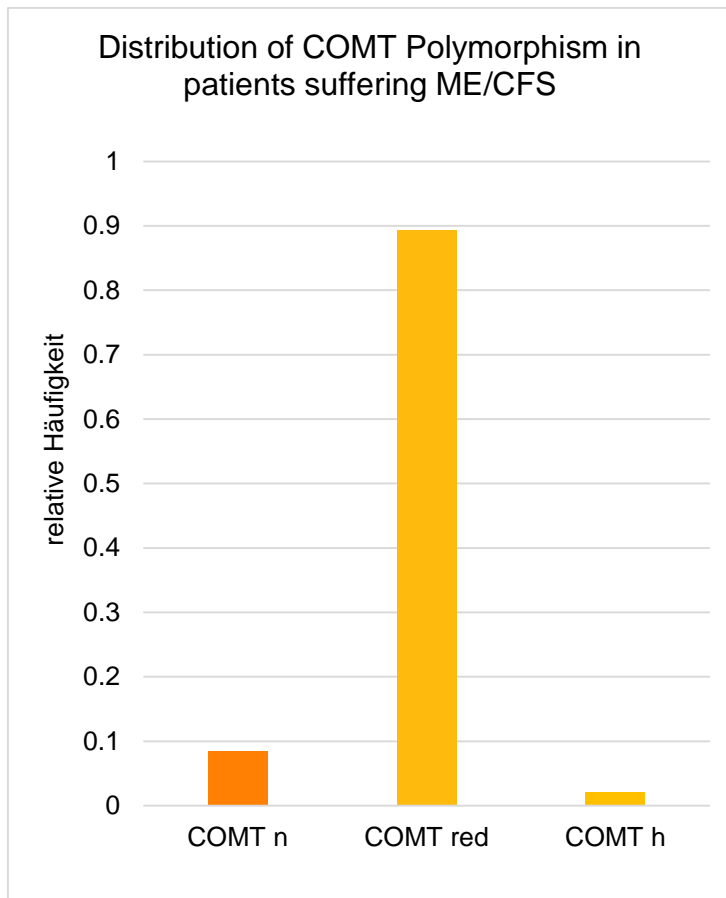


Features of genetic disturbances in cellular detoxification for (environmental)-toxins: Paraoxonase (PON) and microsomal epoxide-hydroxylase (mEH)



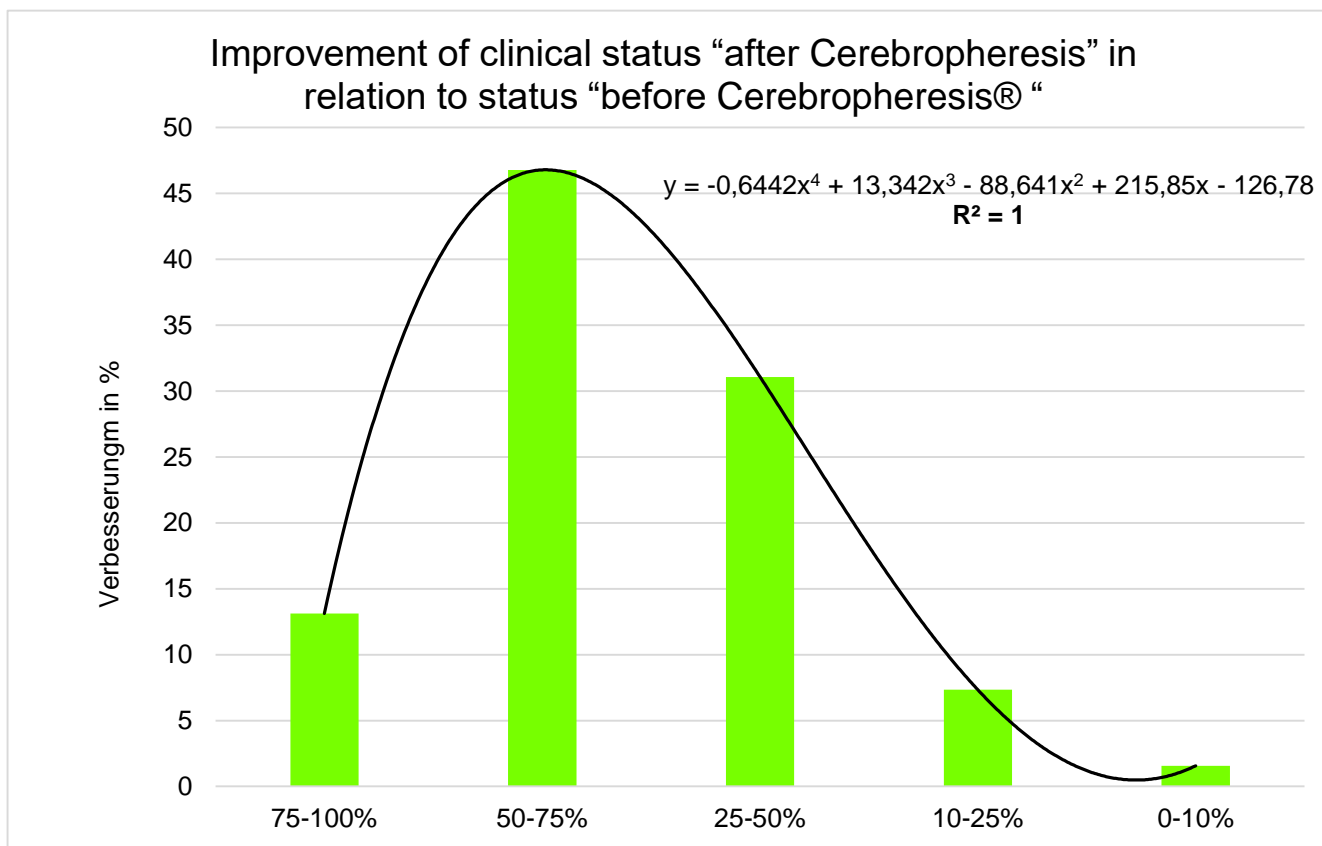


Features of genetic disturbances in brain metabolism: Catechol-oxygen-methyl-transferase(COMT) and tryptophan hydroxylase Type 1/2 (TPH1/2)





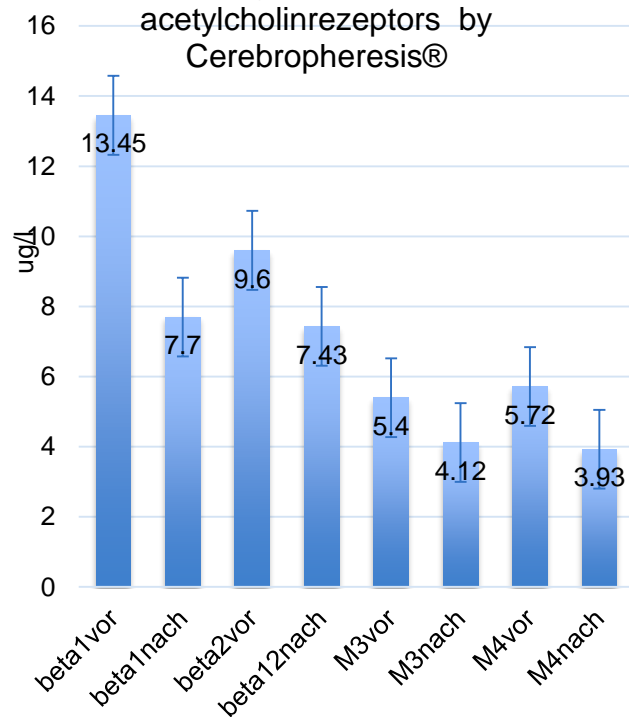
Cerebrophoresis® as a innovative holistic procedere as option for treatment for Myalgic encephalomyelitis syn. chronic fatigue syndrom



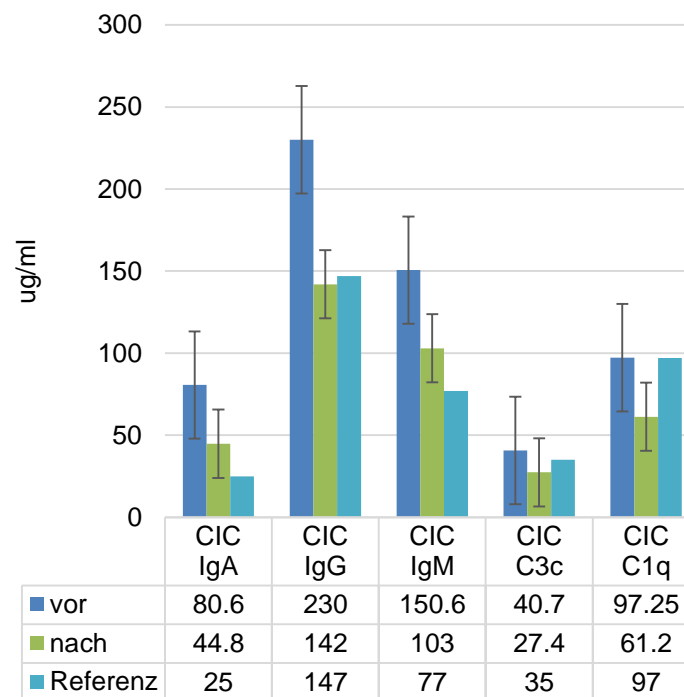


Cerebrophoresis® as a innovative holistic procedere as option for treatment for Myalgic encephalomyelitis syn. chronic fatigue syndrome

Reduction of neurotransmitter antibodies against beta1 and beta 2 adrenerge rezeptors, and muskarinerge Type3 und Type4 acetylcholinrezeptors by Cerebrophoresis®



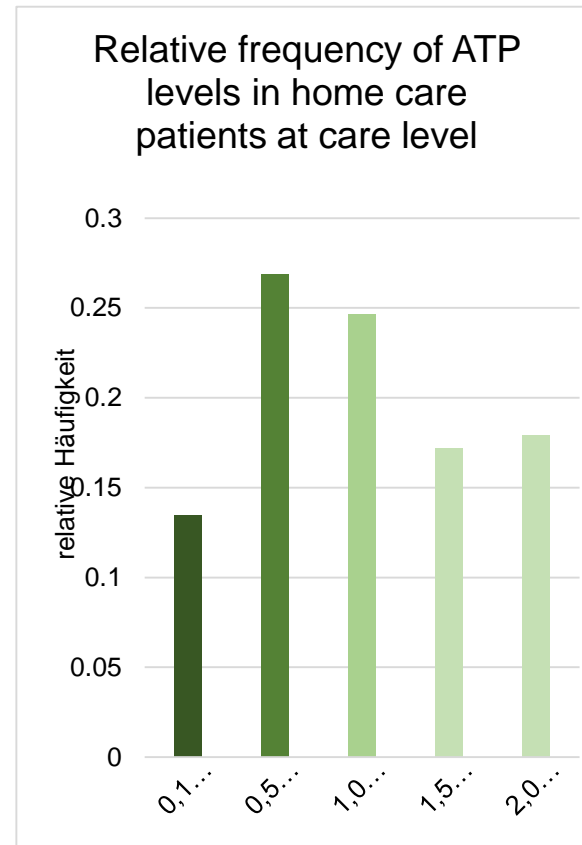
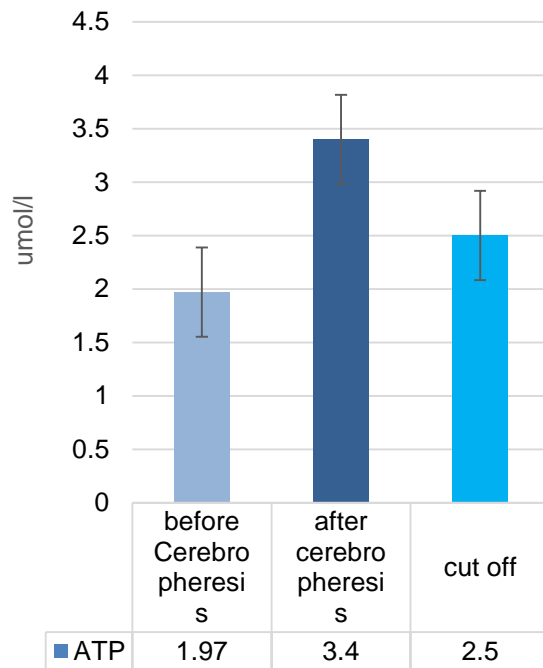
Effects of cerebrophoresis® on circulating immunocomplexes in patients suffering CFS/ME





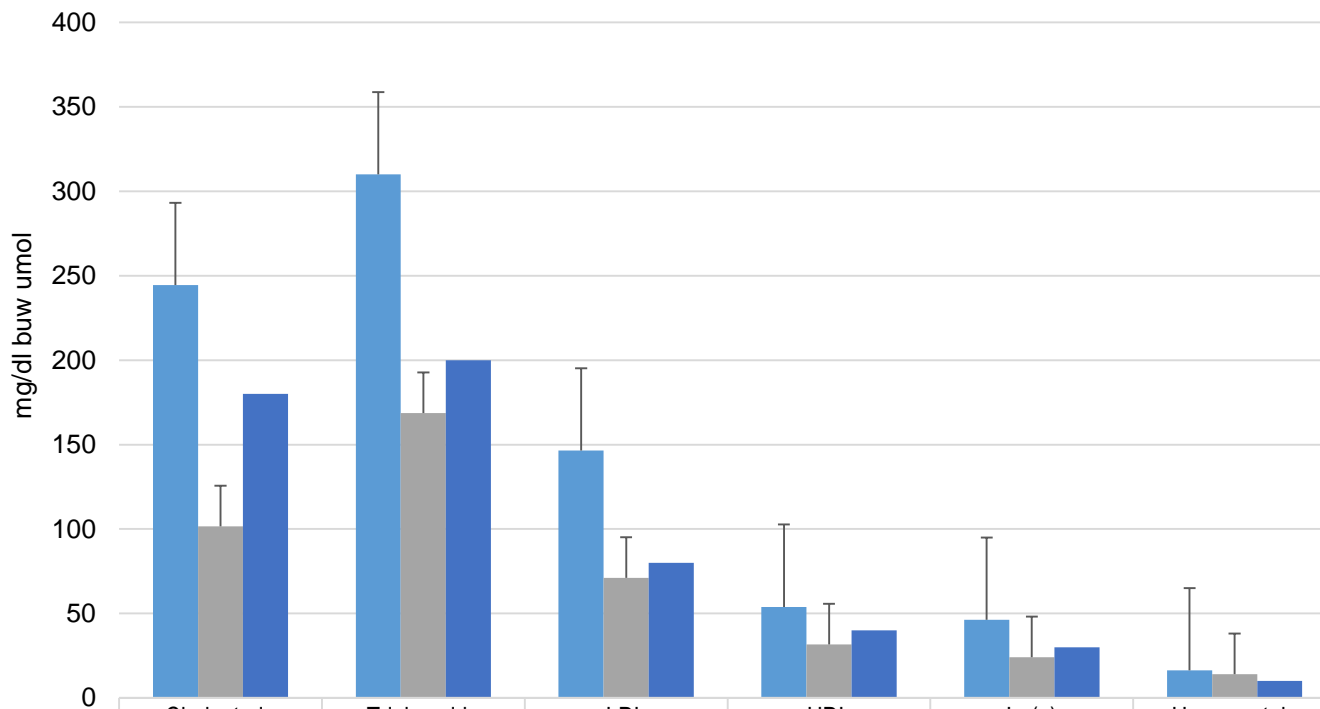
Cerebrophoresis® as a innovative holistic procedere as option for treatment for Myalgic encephalomyelitis syn. chronic fatigue syndrom

Improvement of ATP-levels by cerebrophoresis® in patients suffering ME/CFS





Effect of lipoproteinsystems in patients suffering CFS/ME

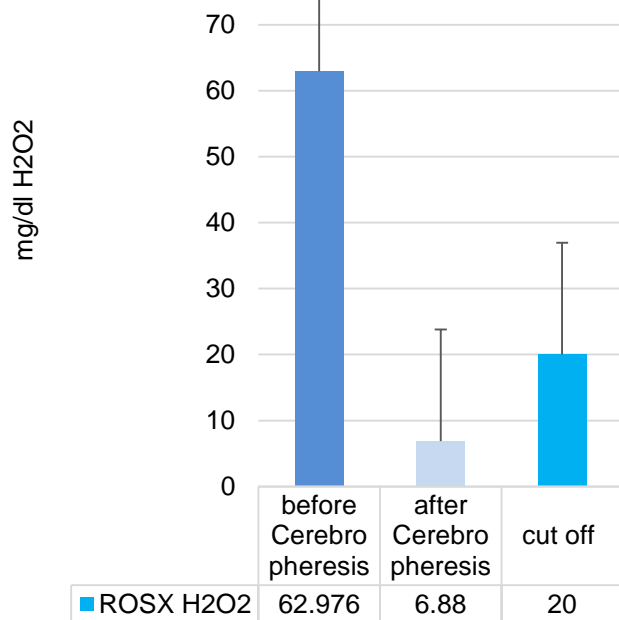


	Cholesterin	Triglyceride	LDL	HDL	Lp(a)	Homocystein
vor Apherese	244.4	310	146.55	53.9	46.2	16.3
nach Apherese	101.5	168.6	71	31.6	24	14.1
Referenz	180	200	80	40	30	10

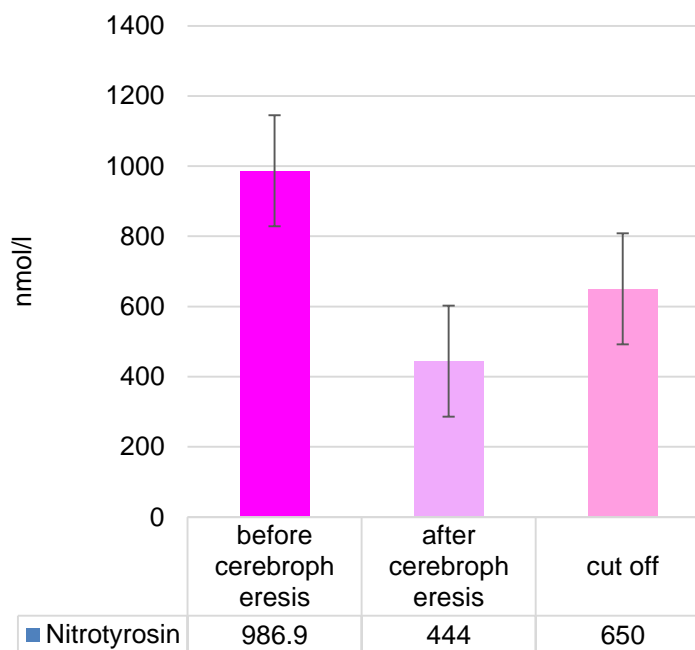


Cerebrophoresis® as a innovative holistic procedere as option for treatment for Myalgic encephalomyelitis syn. chronic fatigue syndrom

Reduction of H2O2 by cerebrophoresis® representing mitochondrial oxidative stress in patients suffering ME/CFS



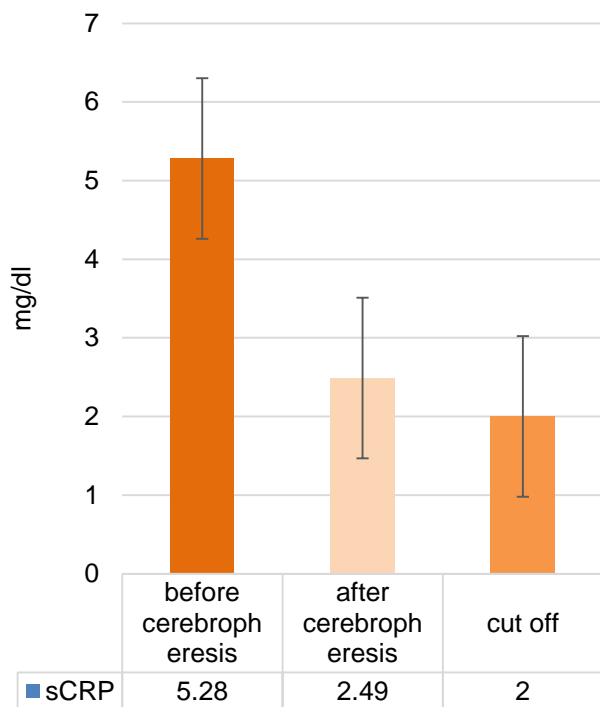
Reduction of nitrosative mitochondrial stress marked as Nitrotyrosin in patients suffering ME/CFS



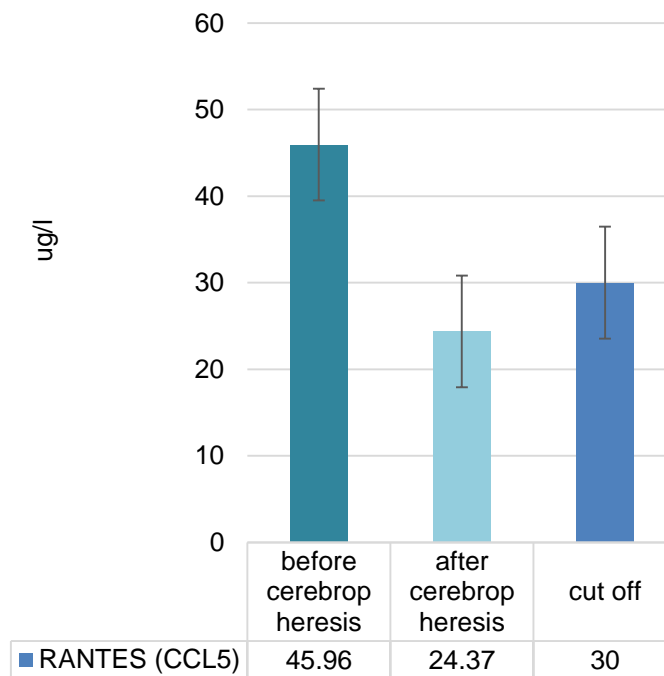


Cerebrophoresis® as a innovative holistic procedere as option for treatment for Myalgic encephalomyelitis syn. chronic fatigue syndrom.

Reduction of sCRP by cerebrophoresis® in patients suffering ME/CFS



Reduction of RANTES (CCL5) by cerebrophoresis® in patients suffering ME/CFS



Conclusions

- Myalgic encephalomyelitis is the pathophysiologic/pathobiochemical base for
- the clinical picture of chronic fatigue syndrom (ICD 10 G93.3)



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The background of myalgic encephalomyelitis are:

- Neurotransmitter receptor autantibodies against beta1/2 und M3/4 receptors in the brain
- Pathologic circulating inflammatory immunocomplexes, atypical gangliosid autantibodies

These irregular autantibodies are based on:

- Multilevel inflammation as sCRP/RANTES/ECP/TNFalpha/fibrinogen/alpha2Makroglobulin
- Mitochondrial stress caused by inflammation causing an oxidative and nitrosative stress
- Leading to depression of ATP by breaking down the Krebs-Cyclus and loss of ubiquinone
- This induces: dyslipoproteinemia

For these in the background are responsible:

- Chronic infectious disease as in 1st line: Borreliosis and Chlamydiosis but also parasites
- Additional: loading with toxins (heavy metals, solvents, pesticides)
- Additional: Leaky gut syndrom producing an „enterogene brewery syndrom“
- At least disturbances in the genetic intracellular detoxification capacity for environmental toxins

For social and health systems now and in future:

engagement for patients in ME/CFS as not psychiatric but evidenced based diagnostic for backgrounds and providing holistic effective therapy as Cerebrophoresis® to save costs in the systems .



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THANK YOU
for your
ATTENTION!