

Disfunção do sistema nervoso central durante a sepse

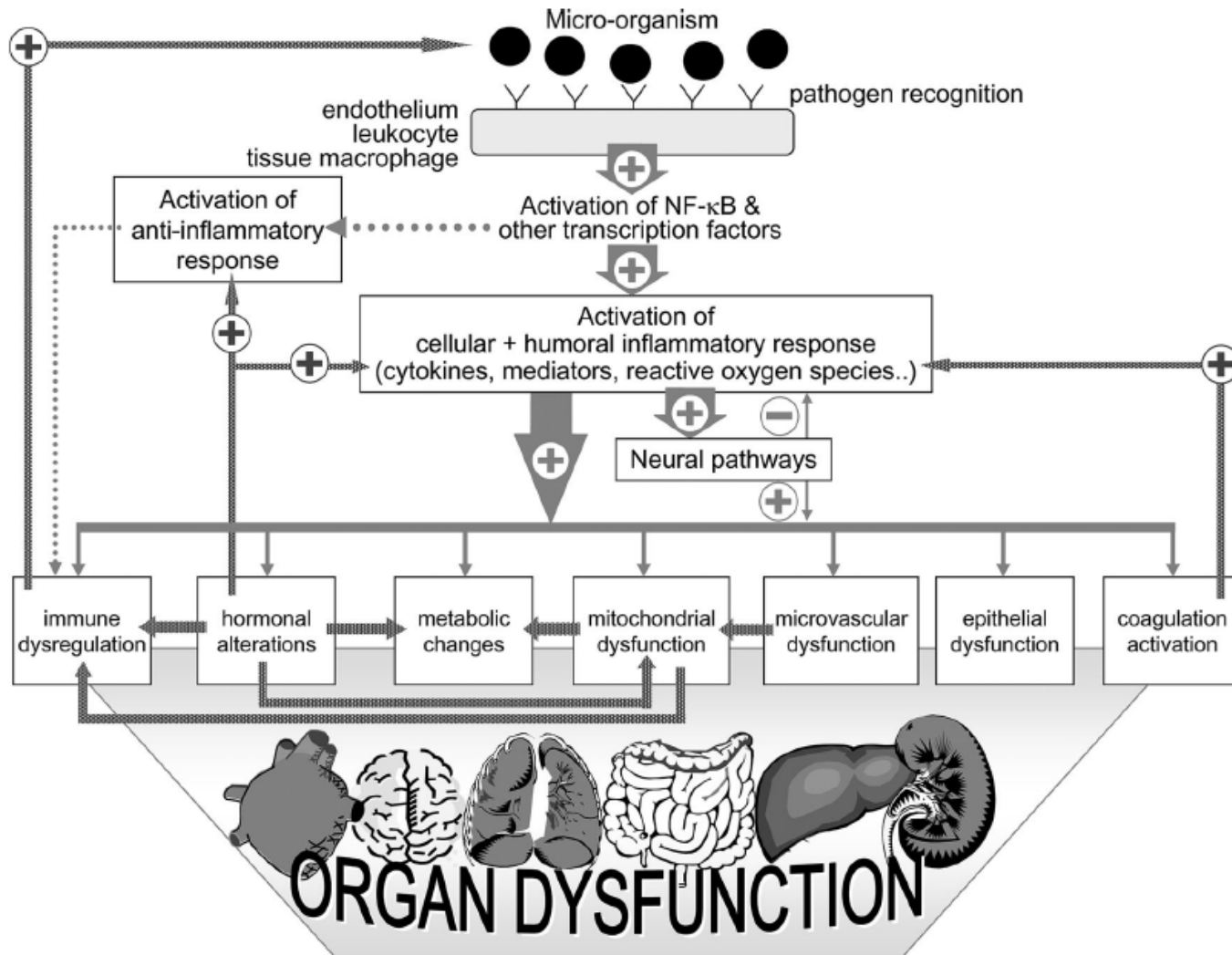
Felipe Dal Pizzol

Programa de Pós-Graduação em Ciências da Saúde
Universidade do Extremo Sul Catarinense

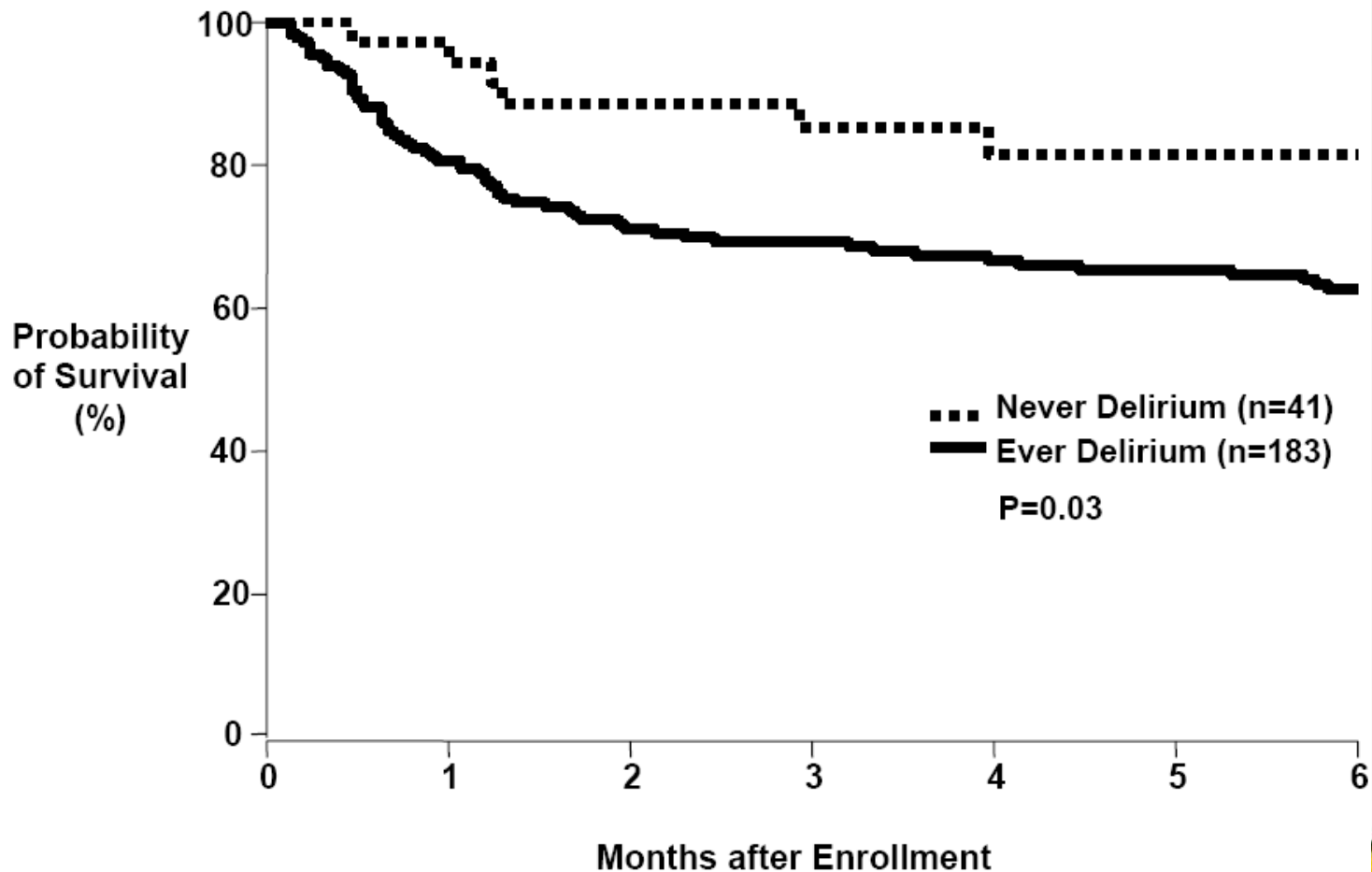
UTI, Hospital São José
Criciúma, SC, Brasil



DISFUNÇÃO ORGÂNICA NA SEPSE

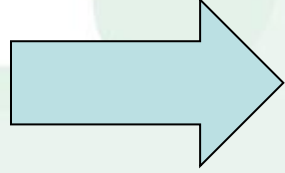


MORTALIDADE EM DISFUNÇÃO DO SNC



NEURO TRANSMITTER ALTERATIONS

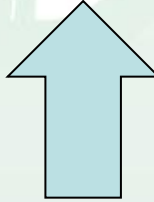
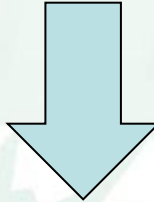
INFLAMMATION



CNS dysfunction



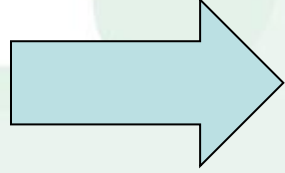
METABOLIC ALTERATIONS



NEURONAL DAMAGE



NEURO TRANSMITTER ALTERATIONS



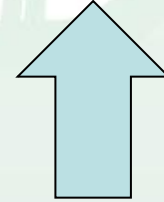
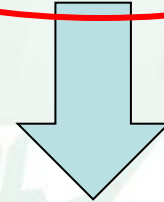
CNS dysfunction



METABOLIC ALTERATIONS



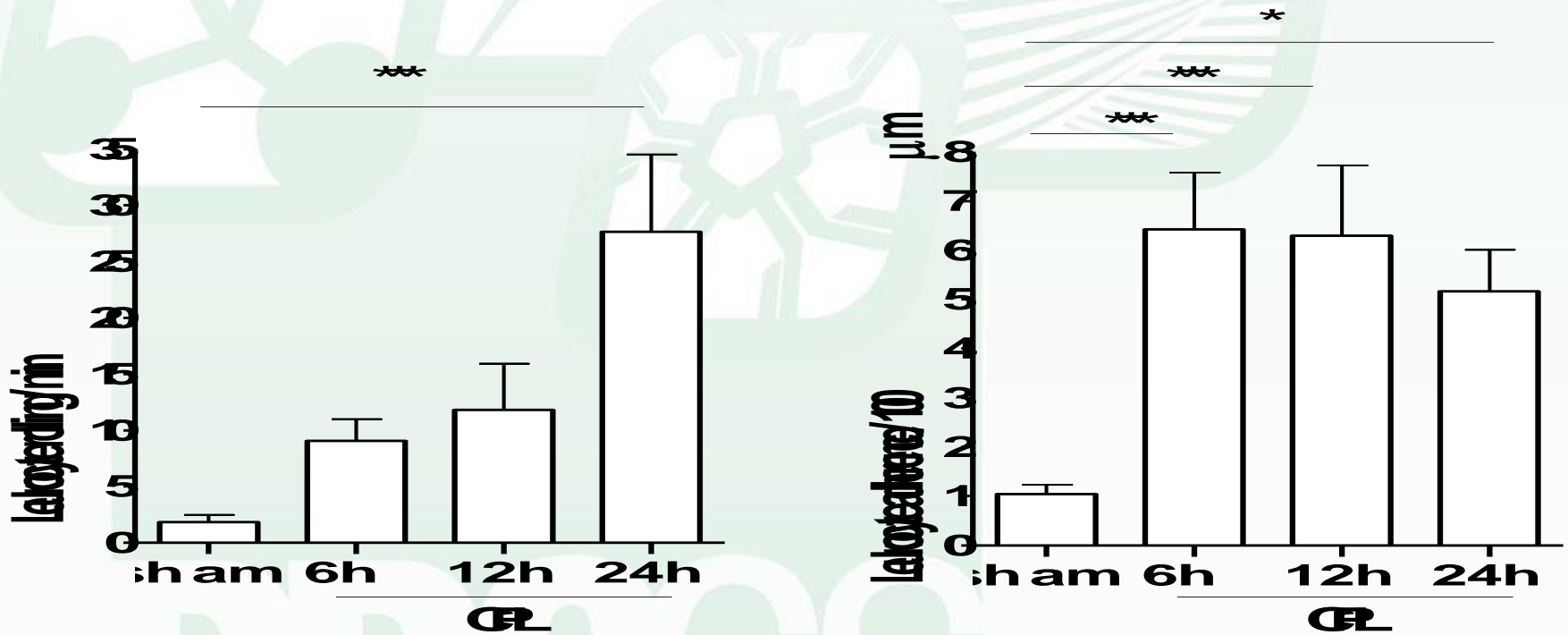
INFLAMMATION



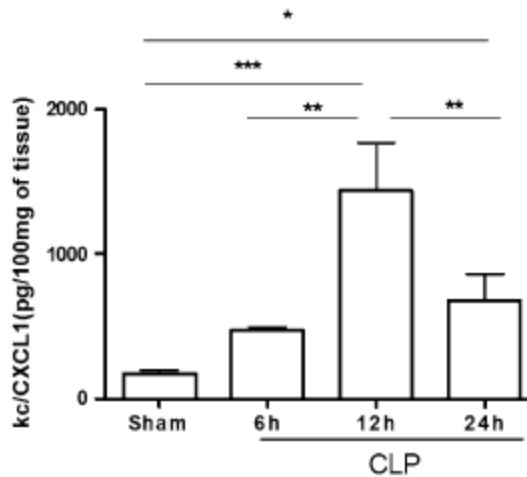
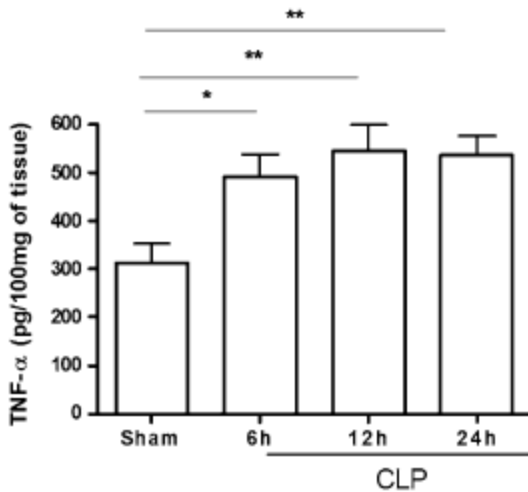
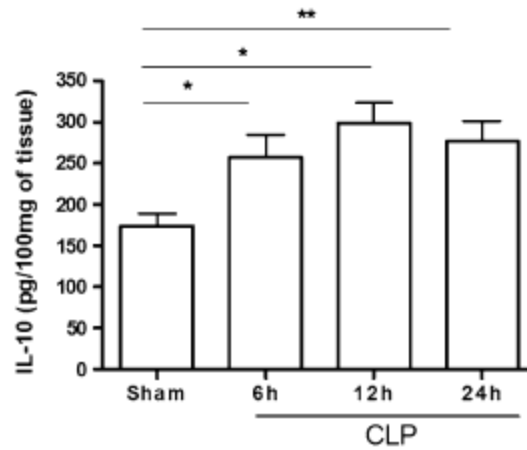
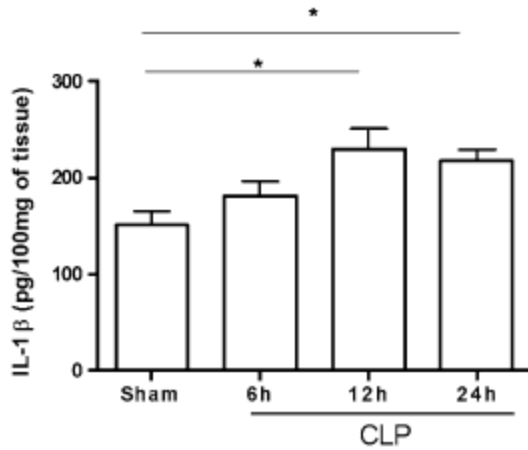
NEURONAL DAMAGE



Leukocyte-endothelium interaction after sepsis induction on the brain microvasculature.



Hippocampal cytokines and chemokines levels after sepsis induction

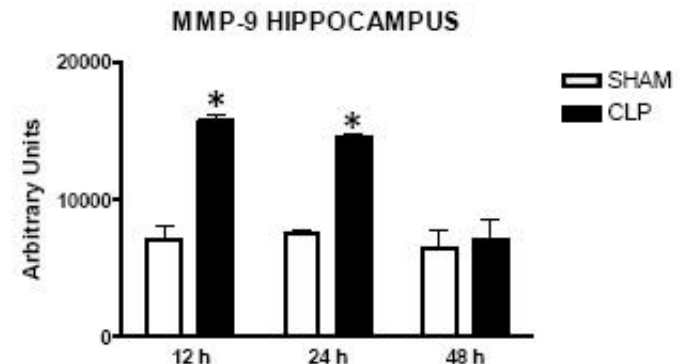
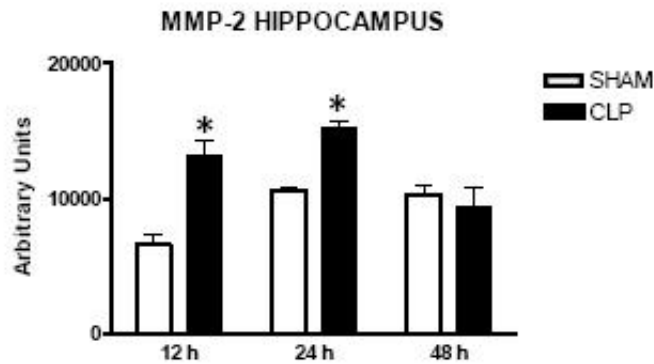
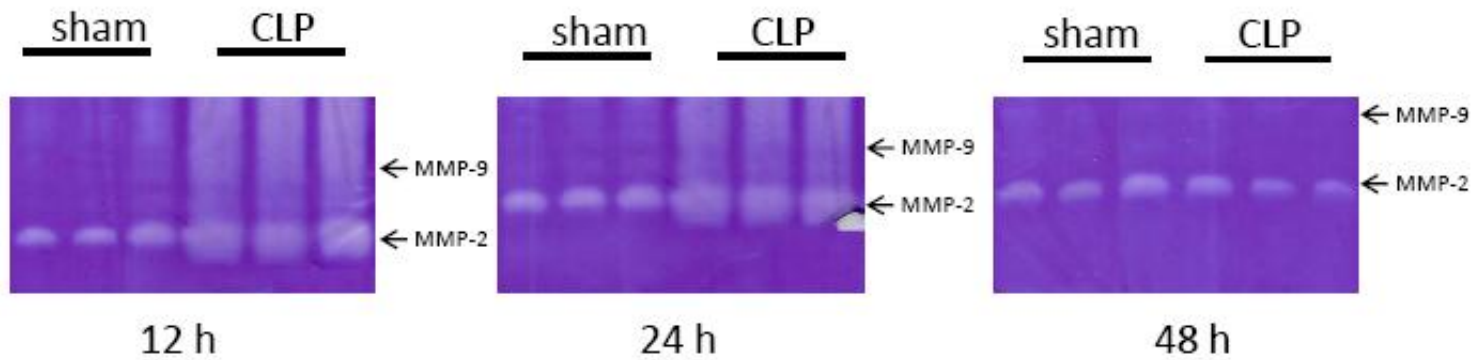


Intensive Care Medicine, 2011

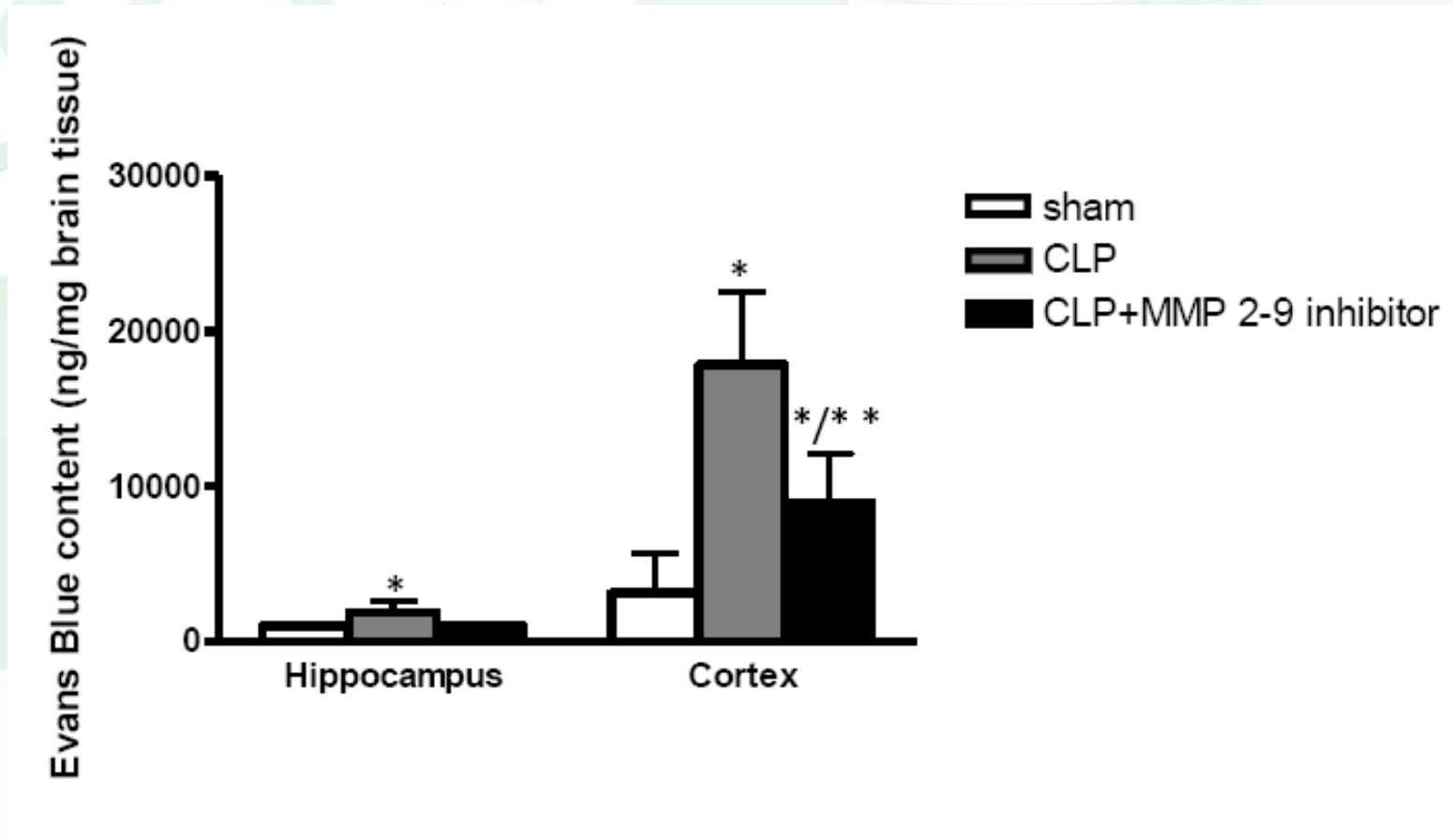


Metaloproteinases em microvasos cerebrais

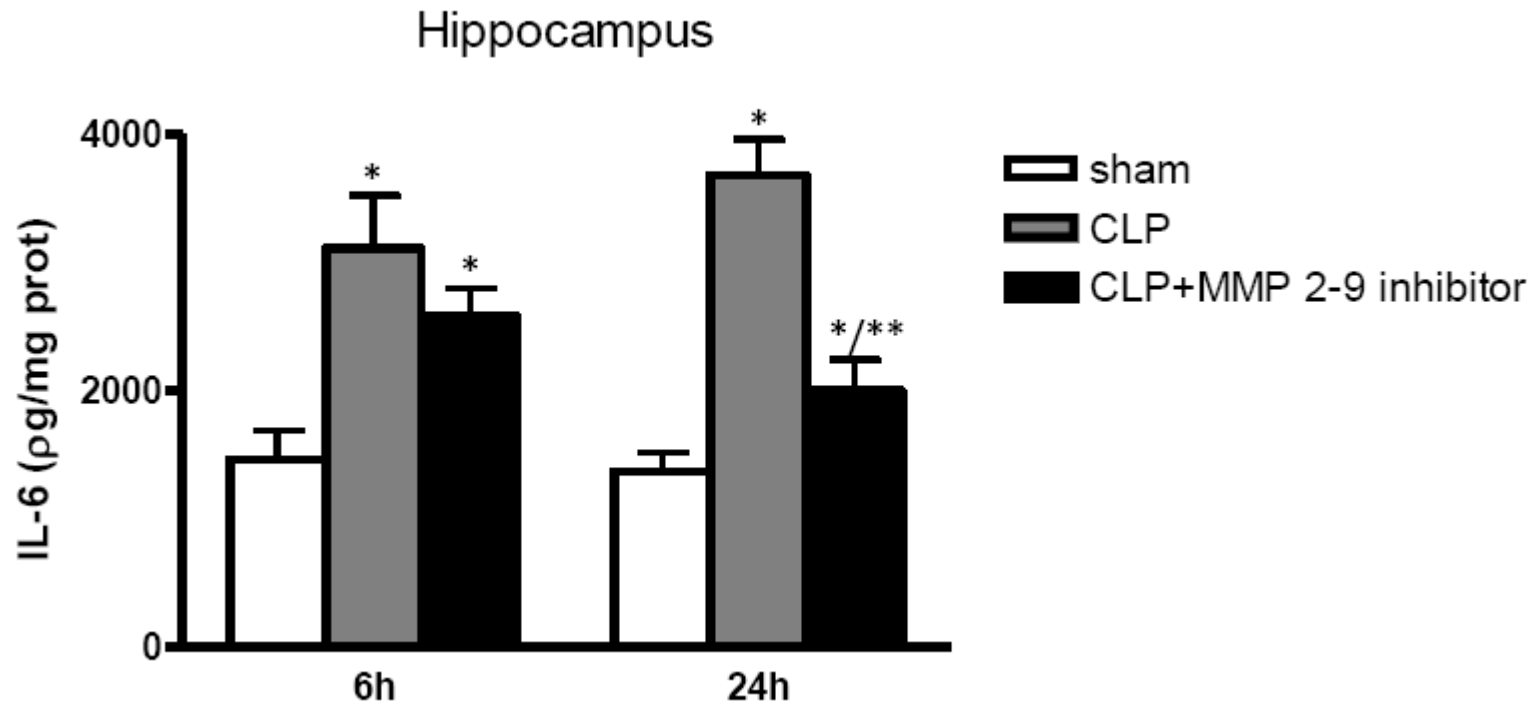
HIPPOCAMPUS MMP ACTIVITY



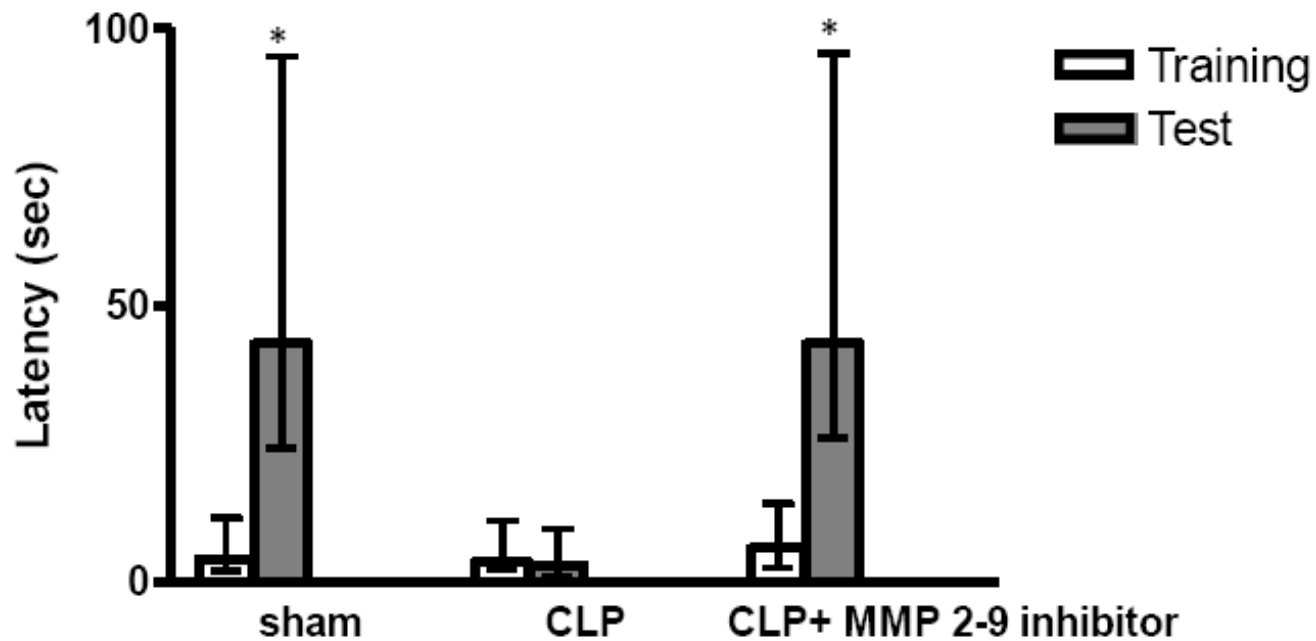
Alterações na permeabilidade da BHE



Inflamação X BHE



Alterações comportamentais x BHE



Inflamação x Delirium

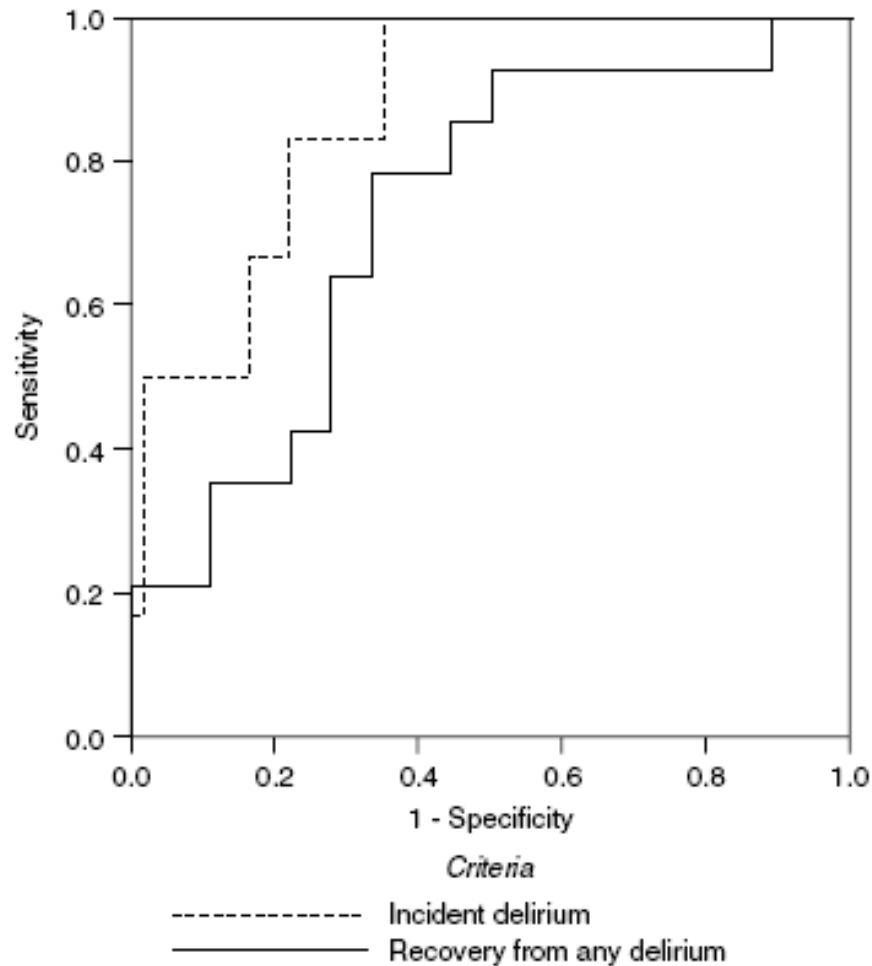
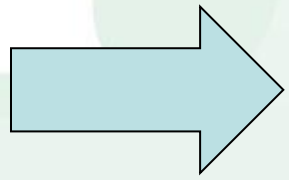


Figure 1. Receiver operator characteristics curves of C-RP with incident delirium (higher C-RP = more incidence) and recovery from incident or prevalent delirium (lower C-RP = more recovery).

NEURO TRANSMITTER ALTERATIONS

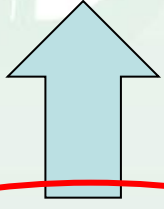
INFLAMMATION



CNS dysfunction



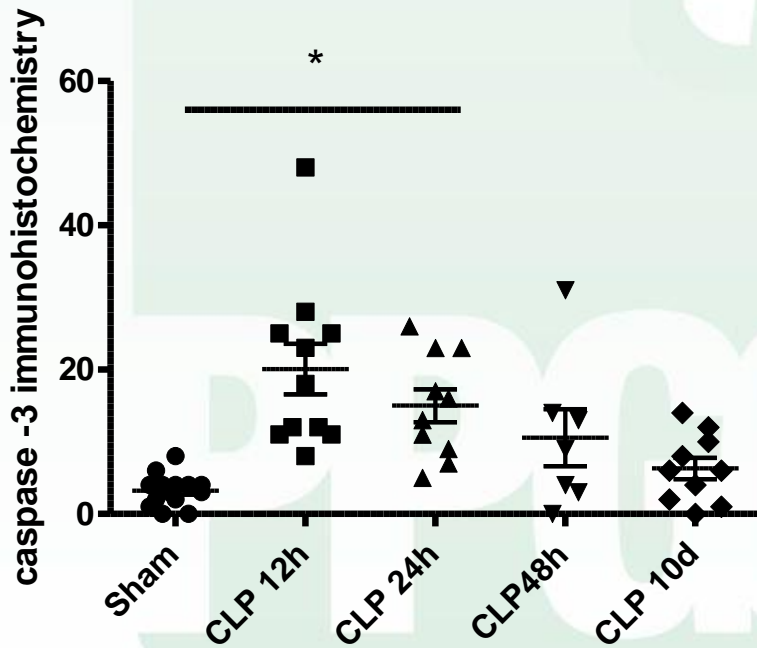
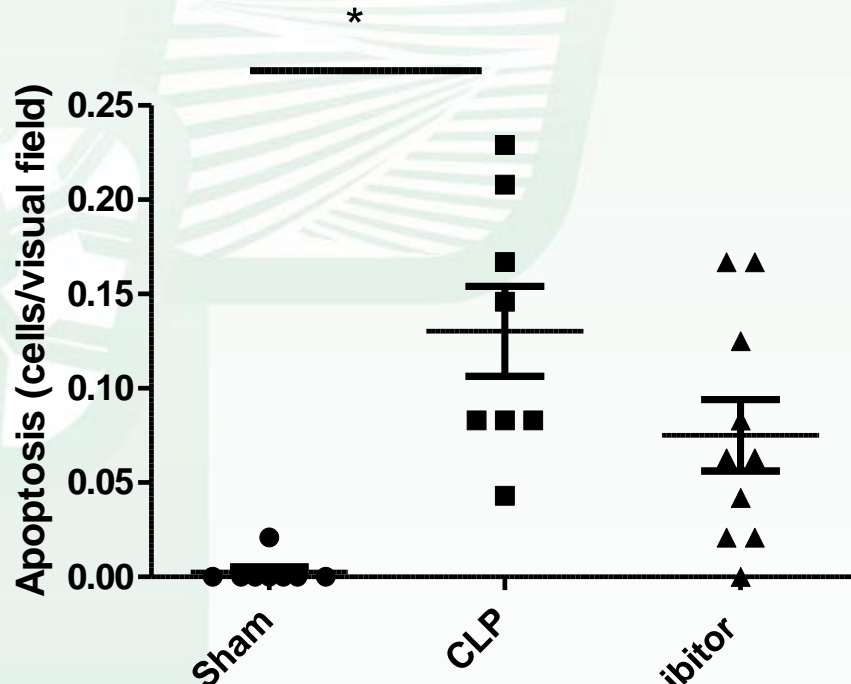
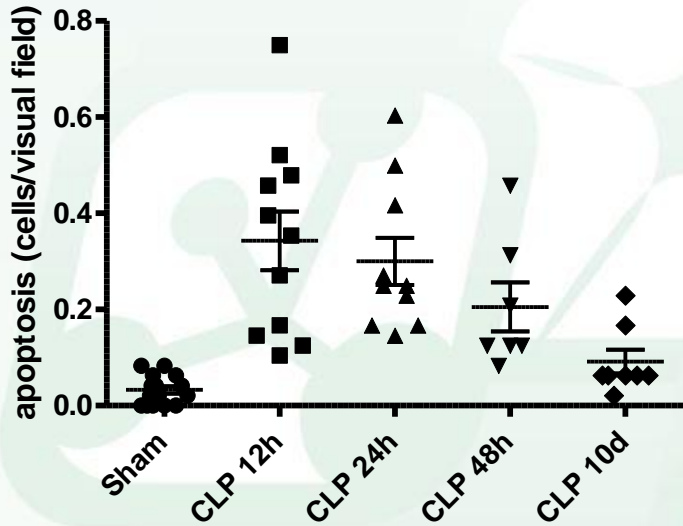
METABOLIC ALTERATIONS



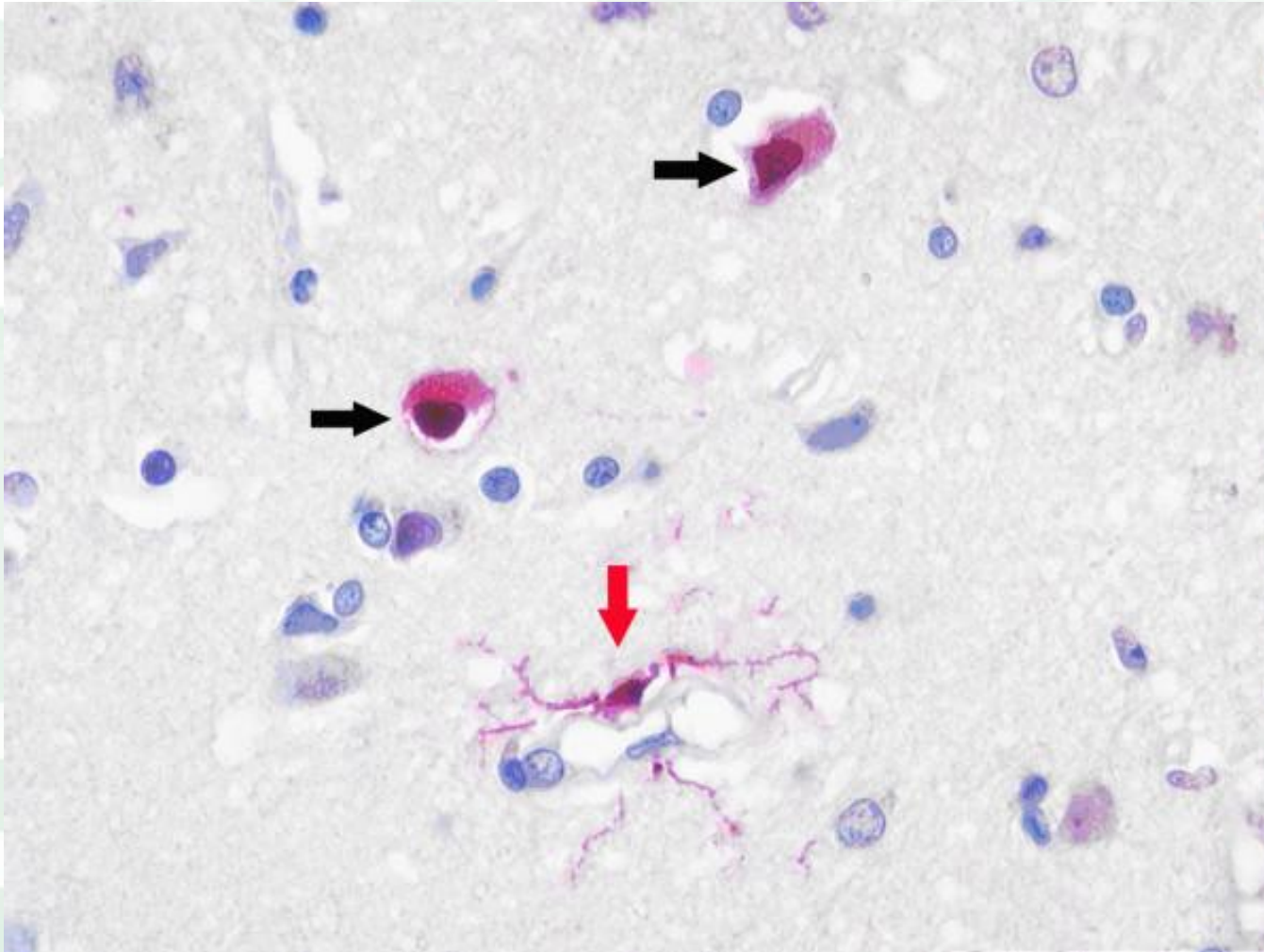
NEURONAL DAMAGE



* Neuronal Apoptosis Animal Model



Apoptose - Humanos



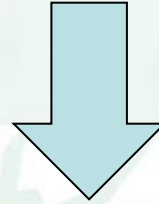
Crit Care. 2011;15(3):R131.

Neuron-specific enolase, but not S100 β , levels predicts the occurrence of delirium in ICU patients

	Delirium N=30	No Delirium N=30
S100 admission	0.83(0.48)	0.88(0.41)
S100 day before delirium	0.55(0.36)	0.61(0.29)
NSE admission	0.79(0.03)	0.59(0.01)*
NSE day before delirium	0.04(0.03)	0.05(0.01)

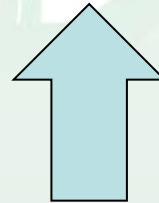
NEURO TRANSMITTER ALTERATIONS

INFLAMMATION

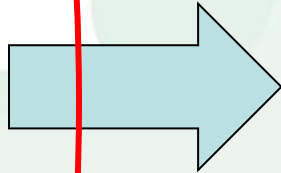


CNS dysfunction

METABOLIC ALTERATIONS



NEURONAL DAMAGE



Transition to delirium and tryptophan/large neutral amino acids ratio

Variables	χ^2	<i>P</i> value
Tryptophan/LNAA ratio	16.1	0.0003
Age	8.1	0.005
Modified APACHE II at enrollment	4.9	0.02
IQCODE	0.1	0.73
Previous day's mental status	15.6	0.0004
Dexmedetomidine on previous day	0.2	0.67
Lorazepam on previous day	0.3	0.58
Fentanyl on previous day	5.23	0.02

Transition to delirium and tyrosine/large neutral amino acids ratio

Variables	χ^2	<i>P</i> value
Tyrosine/LNAA ratio	8.3	0.02
Age	7.3	0.007
Modified APACHE II at enrollment	8.2	0.004
IQCODE	0.2	0.65
Previous day's mental status	18.8	<0.0001
Dexmedetomidine on previous day	0.72	0.39
Lorazepam on previous day	1.71	0.19
Fentanyl on previous day	3.3	0.07

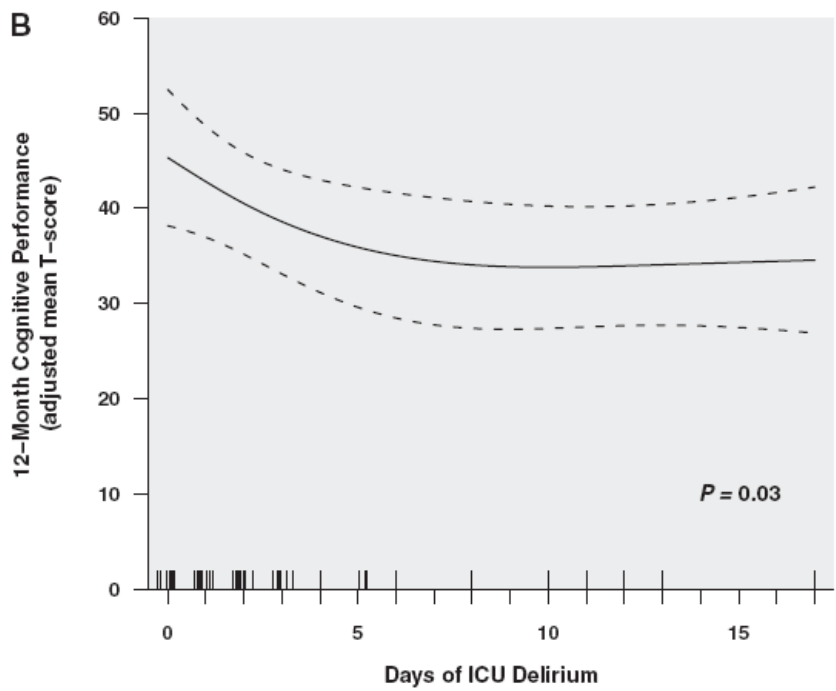
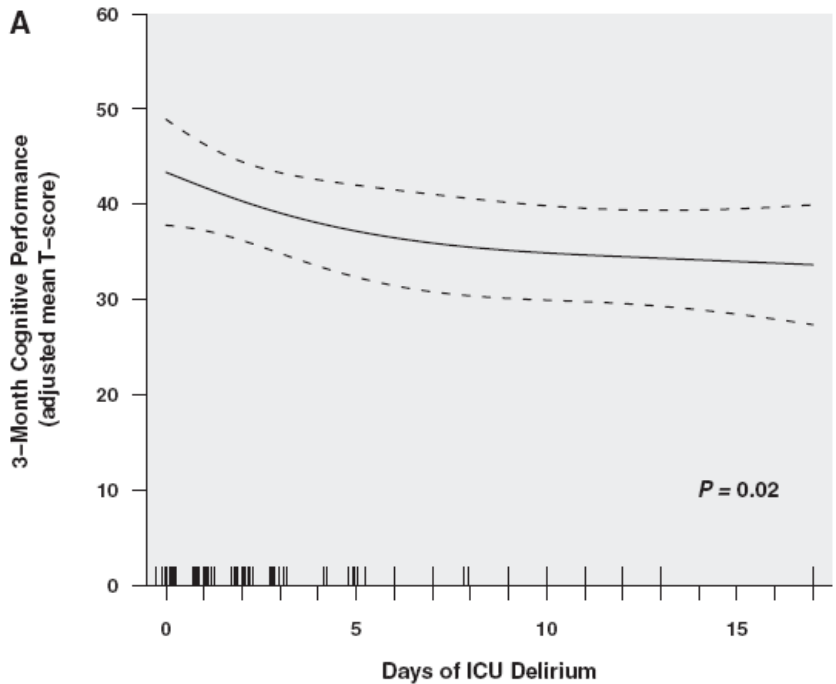
Serotonina e atividade de acetilesterase séricas e desenvolvimento de delirium

	Delirium N=35	No Delirium N=39
Serotonina	3.1 (0.9)	3.0 (0.8)
Acetilcolinesterase	1.8 (1.6)	2.2 (2.0)

DISFUNÇÃO CRÔNICA DO SNC?

PPGCS





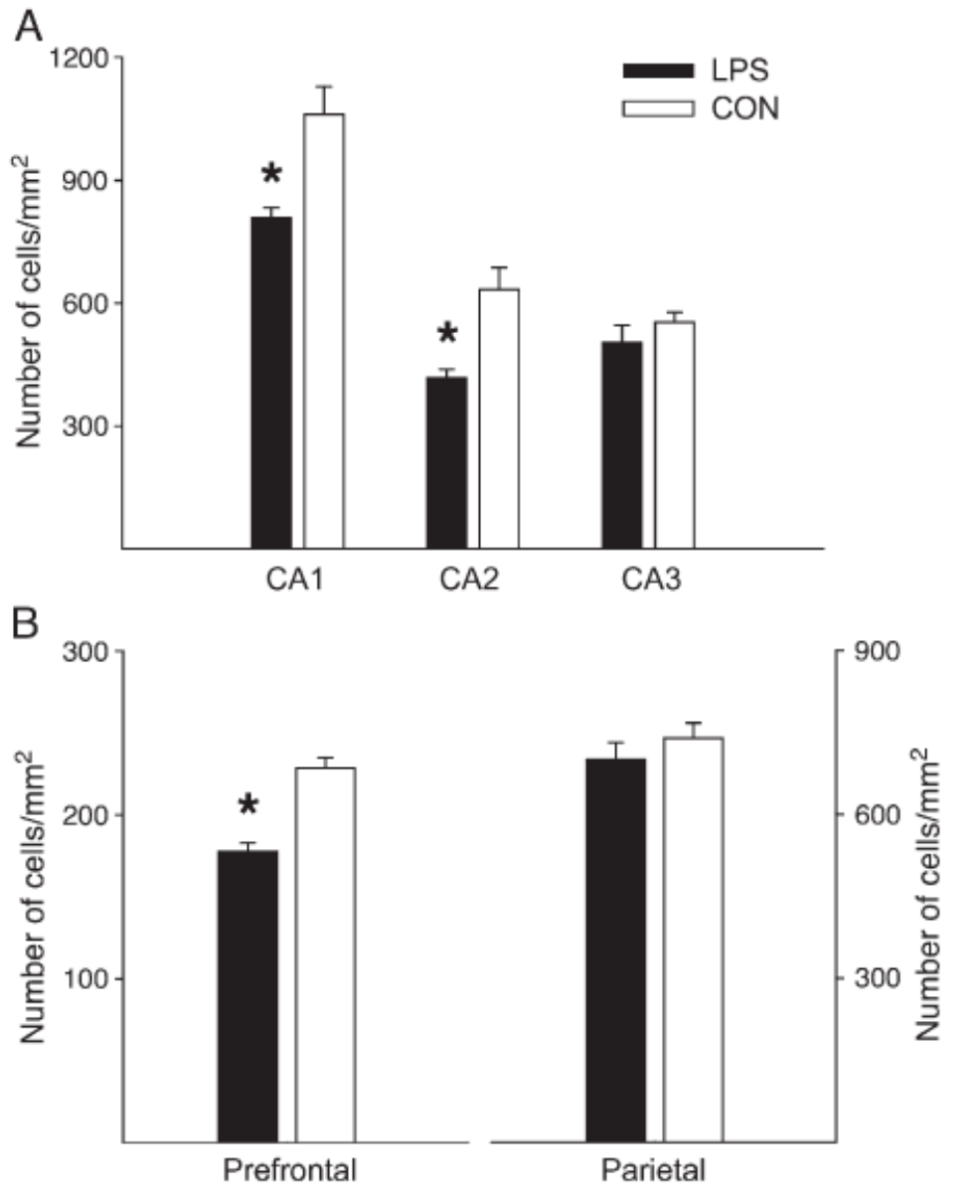
Delirium as a predictor of long-term cognitive impairment in survivors of critical illness

Timothy D. Girard, MD, MSCI; James C. Jackson, PsyD; Pratik P. Pandharipande, MD, MSCI; Brenda T. Pun, MSN; Jennifer L. Thompson, MPH; Ayumi K. Shintani, PhD, MPH; Sharon M. Gordon, PsyD; Angelo E. Canonico, MD; Robert S. Dittus, MD, MPH; Gordon R. Bernard, MD; E. Wesley Ely, MD, MPH

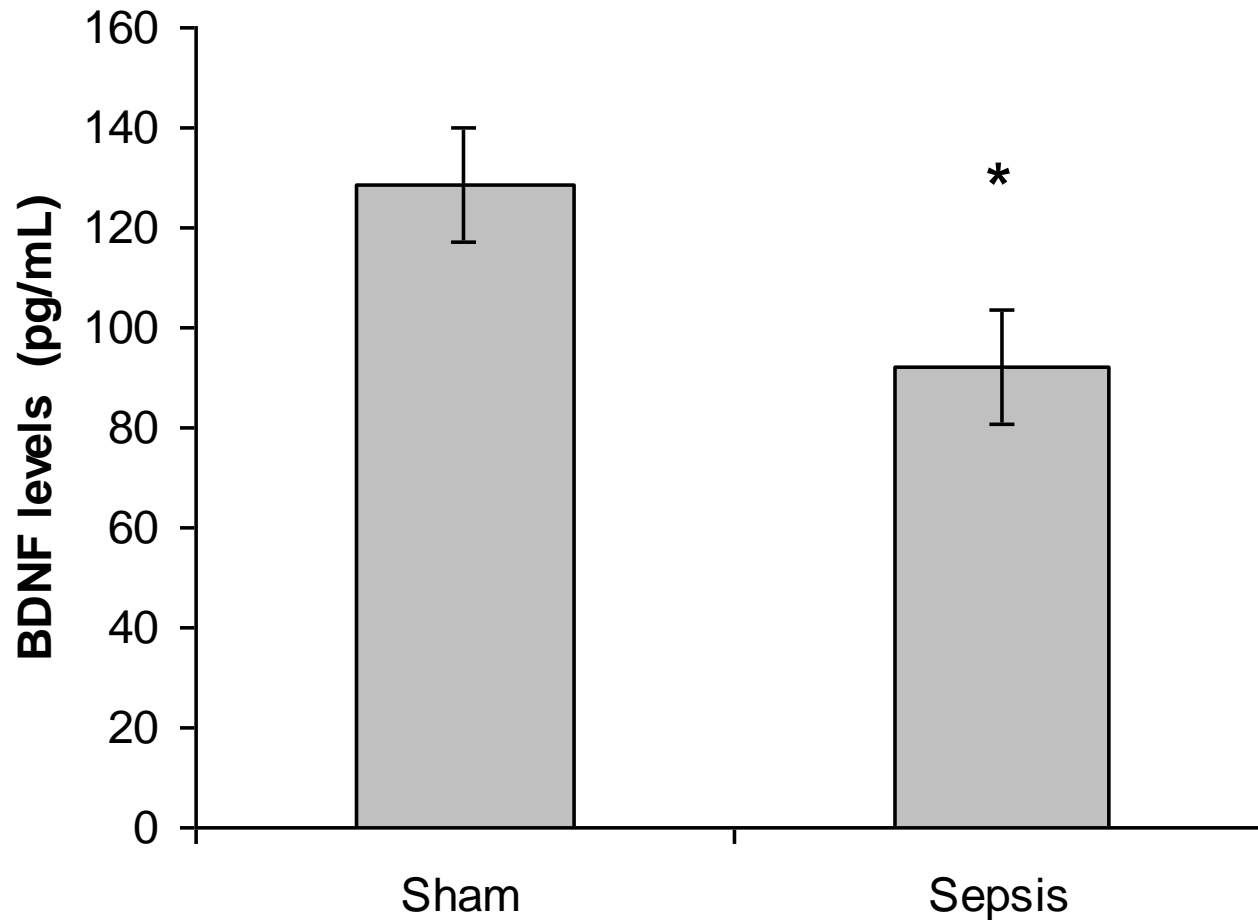
Crit Care Med 2010 Vol. 38, No. 7



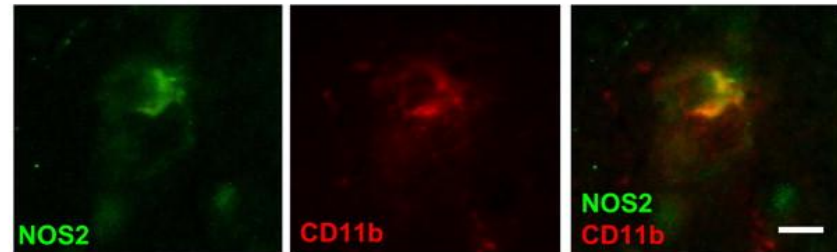
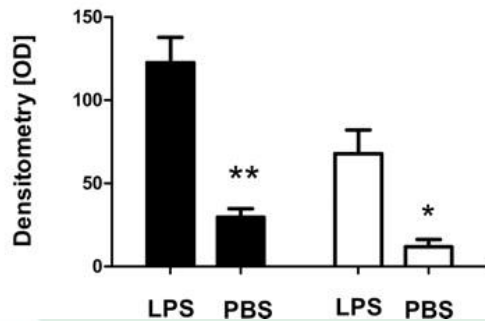
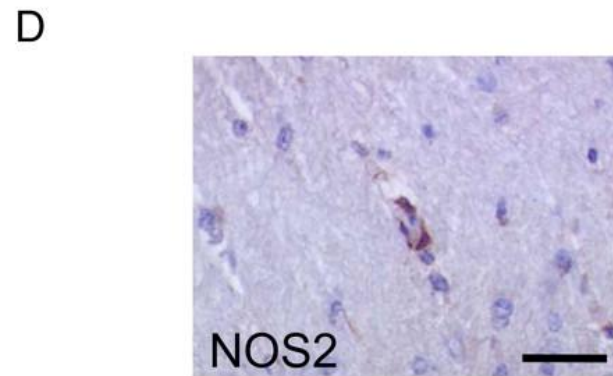
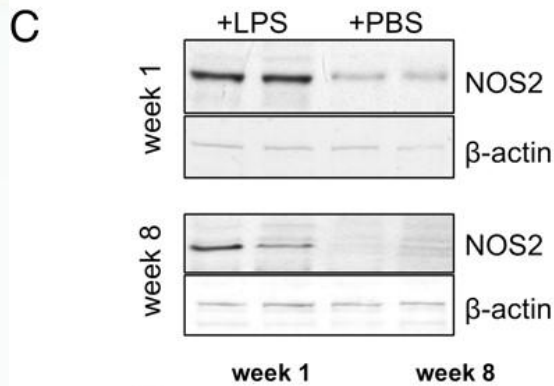
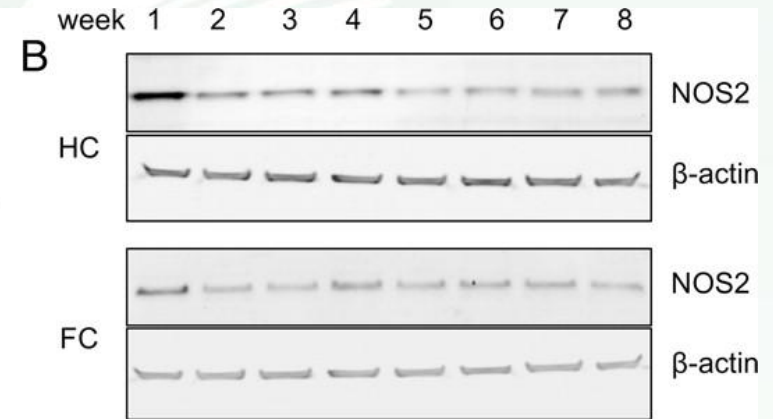
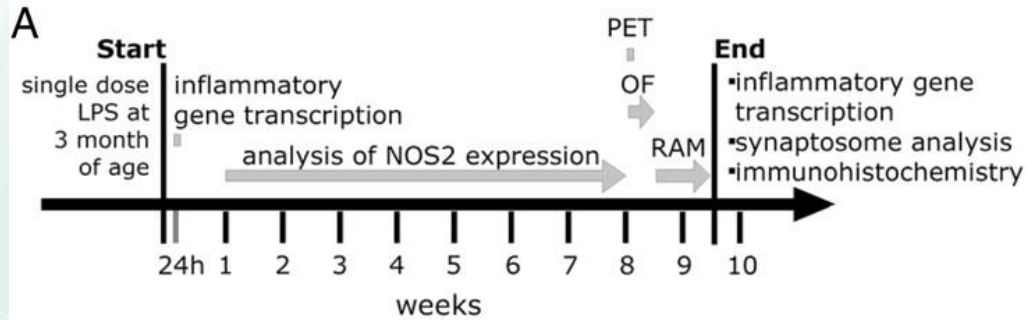
Redução de neurônios colinérgicos em sobreviventes

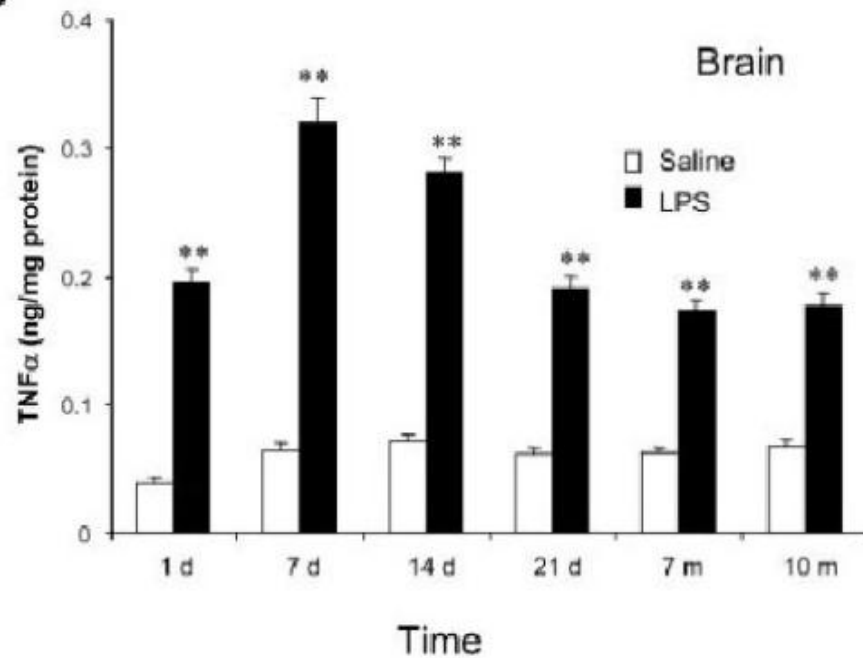
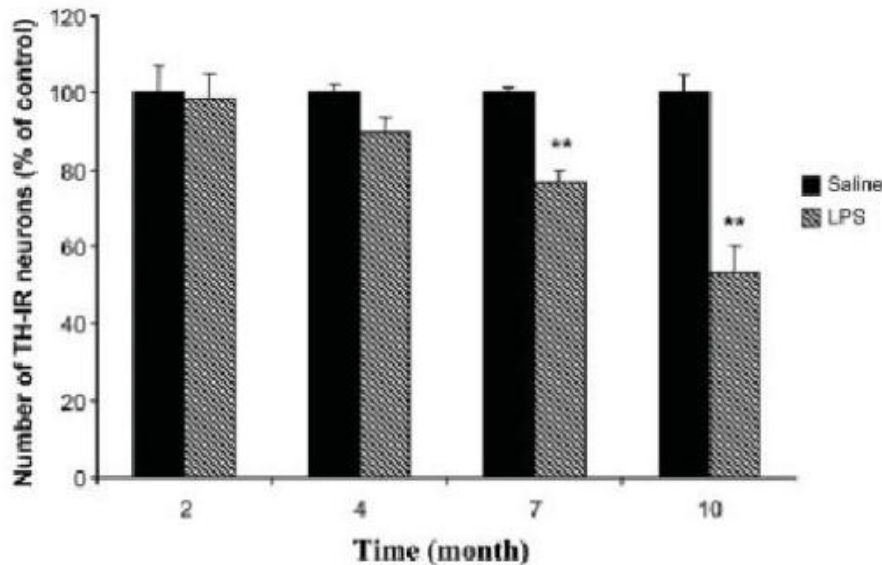


BDNF hipocampo 10 dias após CLP



Peripheral LPS administration causes sustained NOS2 expression



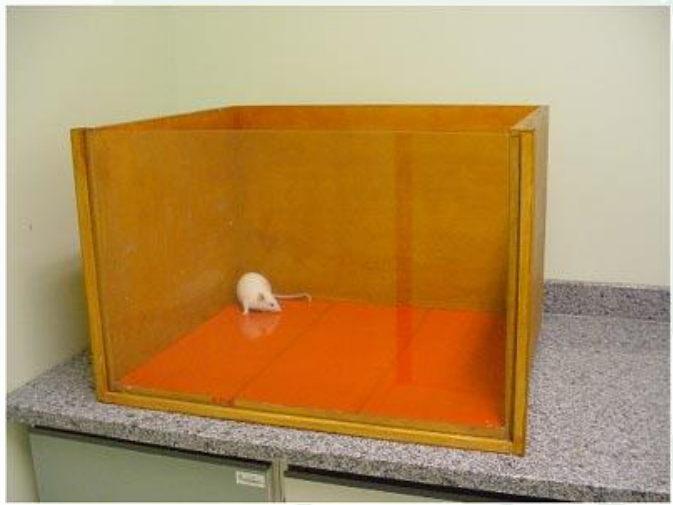
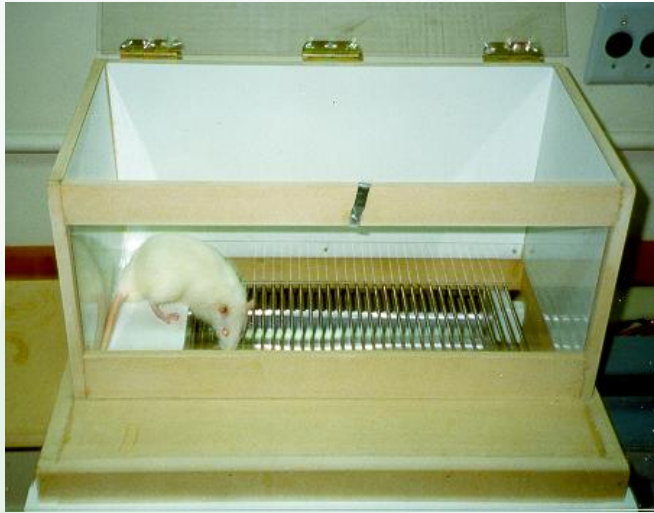
B**A**

Aumento sustentado de TNF e redução de neurônios dopaminérgicos após injeção de LPS

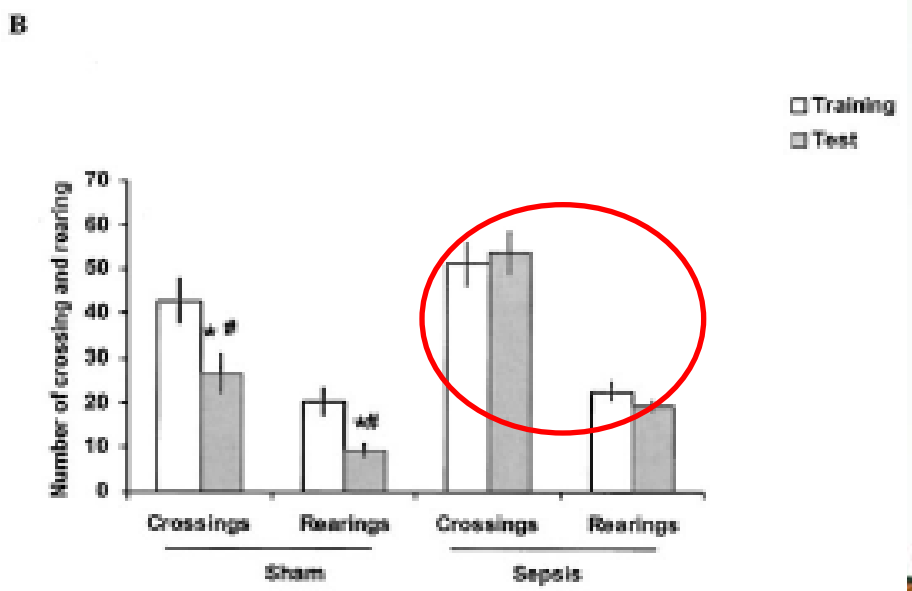
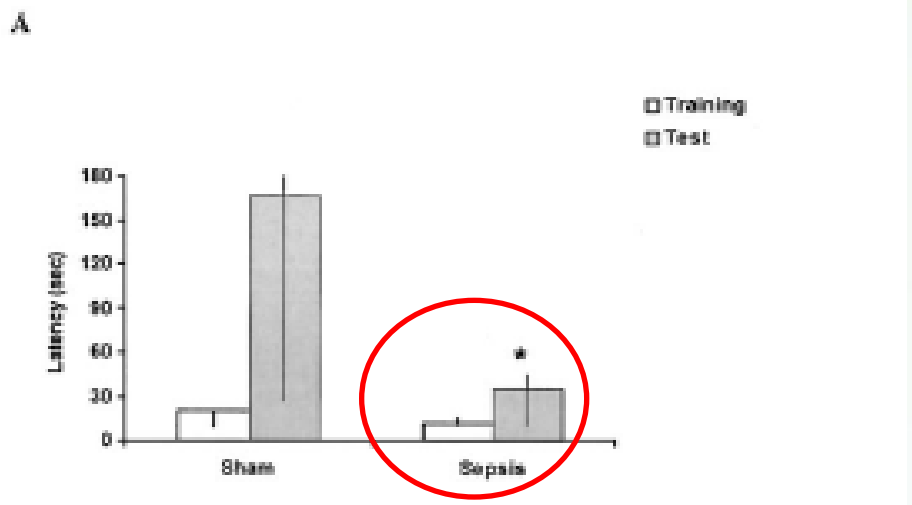
ALTERAÇÃO COGNITIVA

PPGCS

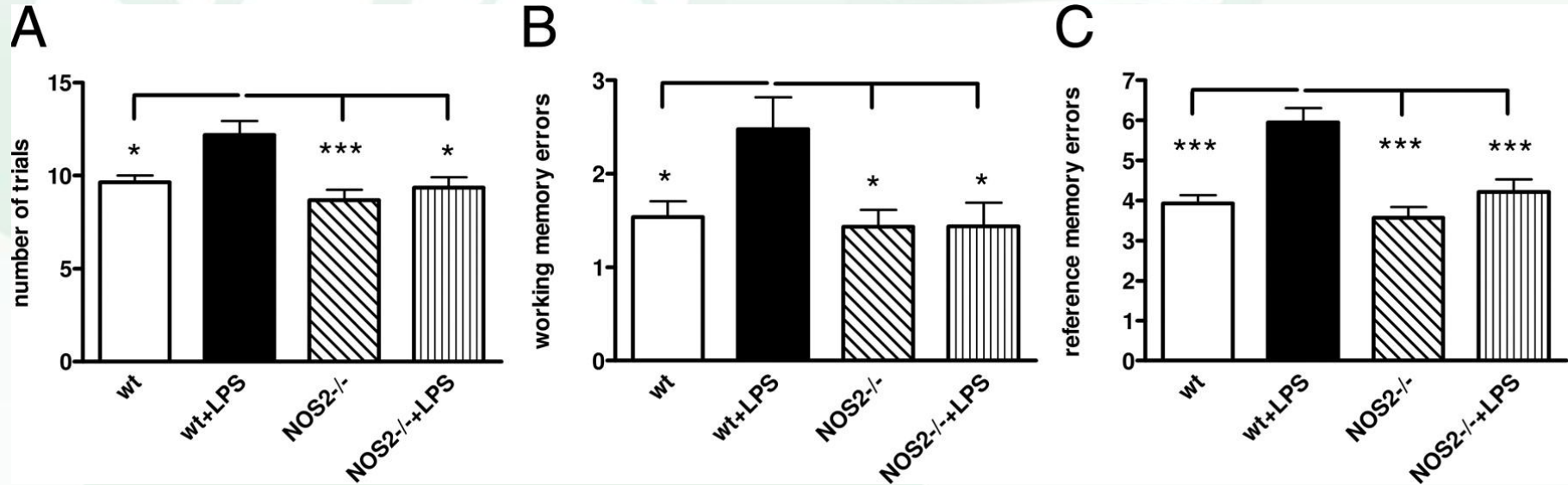




- ✓ Barichello et al CCM 2005 33: 221
- ✓ Barichello et al CCM 2005 33: 1671
- ✓ Barichello et al BJMBR 2007 40: 831
- ✓ Barichello et al ICM 2008 34: 1724

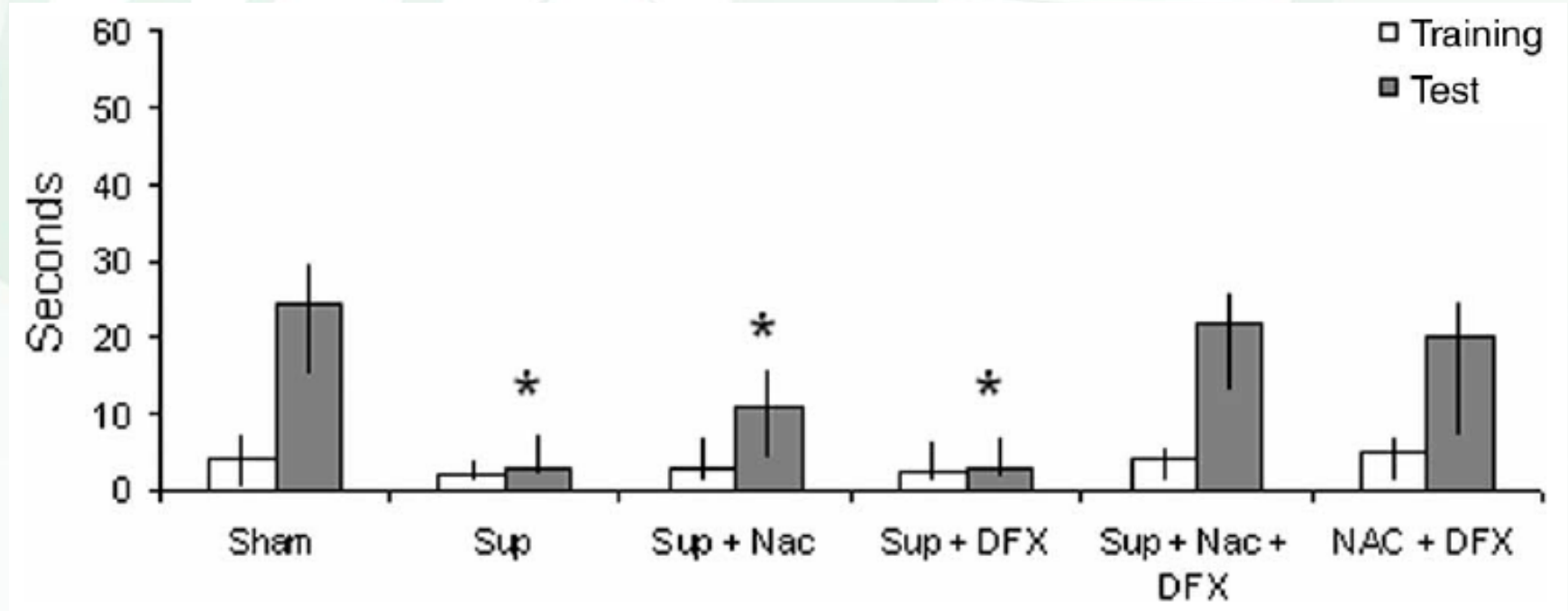


INIBIÇÃO DE NOS ATENUA ALTERAÇÃO COGNITIVA



J. Neurosci. 2009

DIMINUIÇÃO DE ESTRESSE OXIDATIVO ATENUA ALTERAÇÃO COGNITIVA



Crit Care Med. 2007

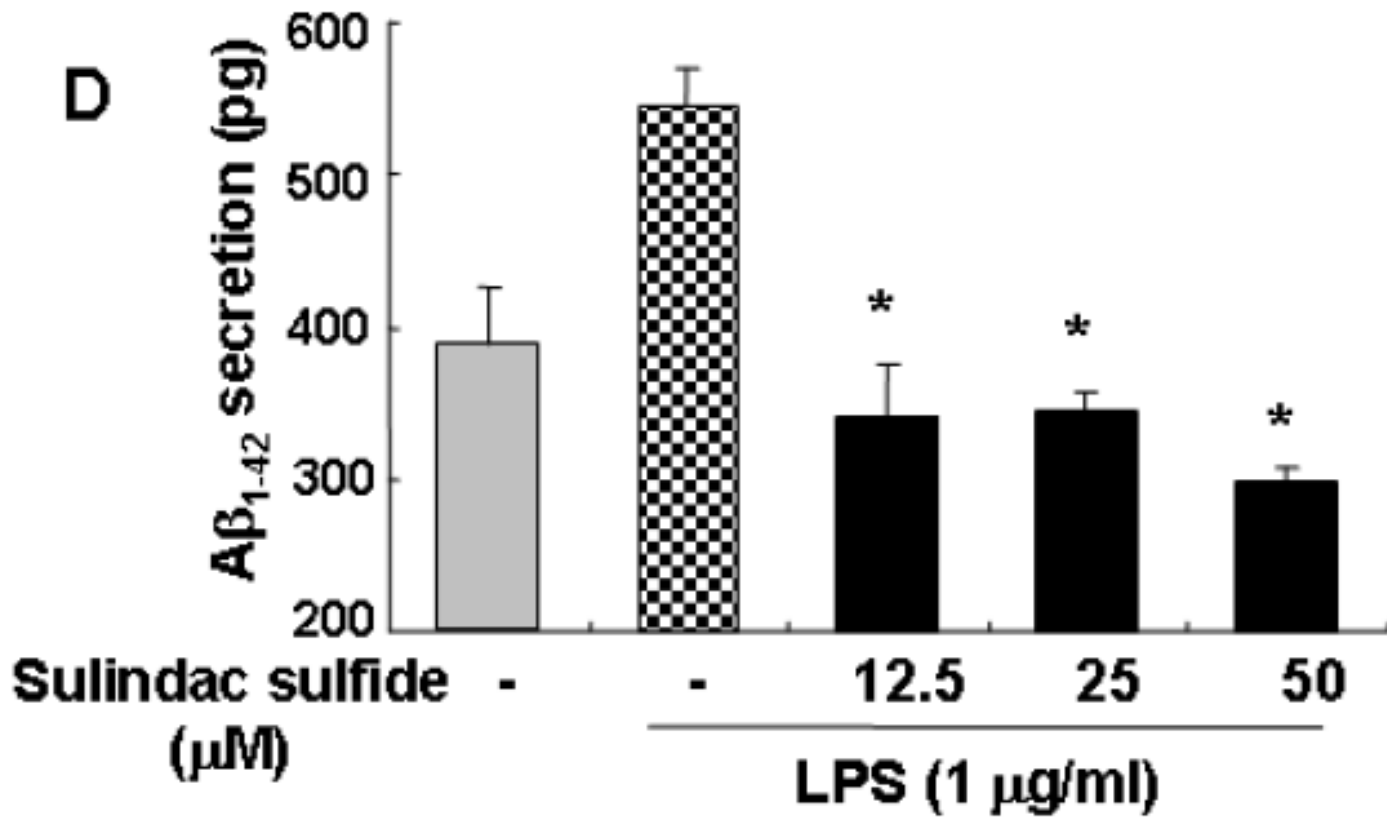


MECANISMOS DE DISFUNÇÃO CRÔNICA

PPGCS

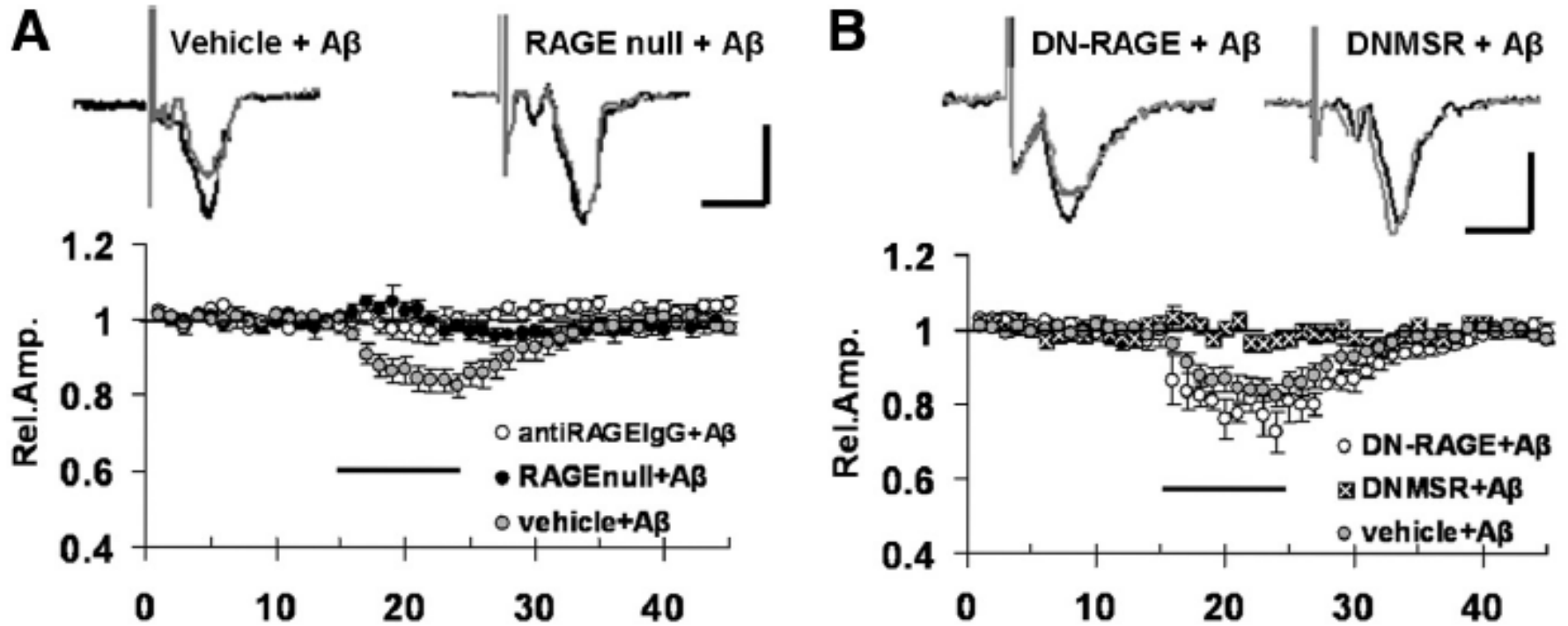


Inflamação induz secreção de beta-amilóide

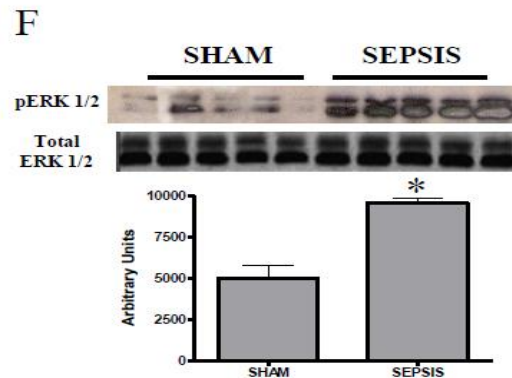
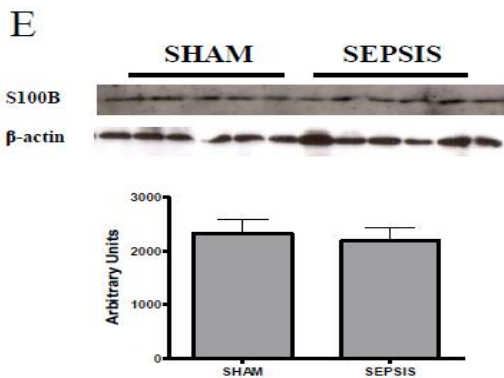
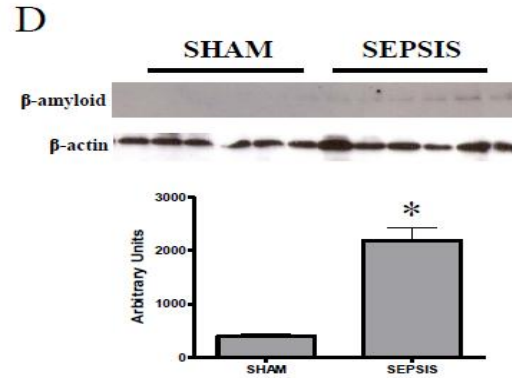
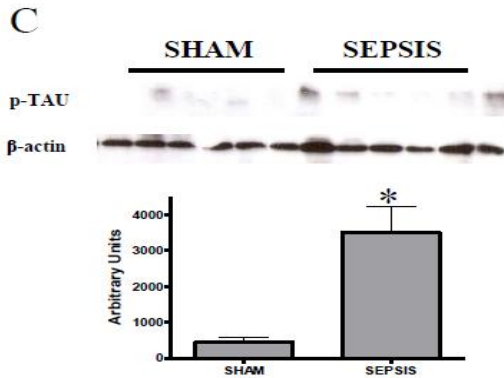
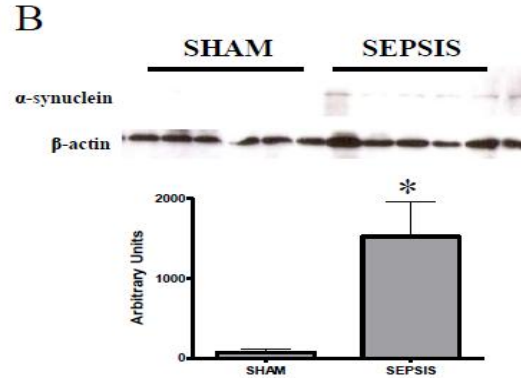
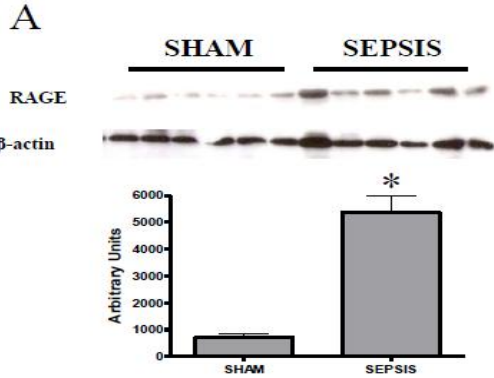


Journal of Neuroinflammation 2008

INTERAÇÃO RAGE x BETA-AMILÓIDE LEVA ALTERAÇÕES COGNITIVAS



HIPPOCAMPUS



RAGE, BETA-AMILÓIDE
EM SNC EM
SOBREVIVENTES DE
SEPSE

CONCLUSÃO

- Vários mecanismos estão associados a disfunção cerebral aguda da sepse
- Alterações agudas do SNC parecem levar alterações sustentadas, induzindo mecanismos de neurodegeneração

Agradecimentos



Instituto Nacional de Ciência e Tecnologia
Translacional em Medicina



PORTUGUÊS



ENGLISH



GCS

