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Andrea Tognù

MZ EVENTS

TITOLO

- Armi non convenzionali: il ruolo dei Nutraceutici.

Livio Luongo, Department of Experimental Medicine, University of Campania «L. Vanvitelli»

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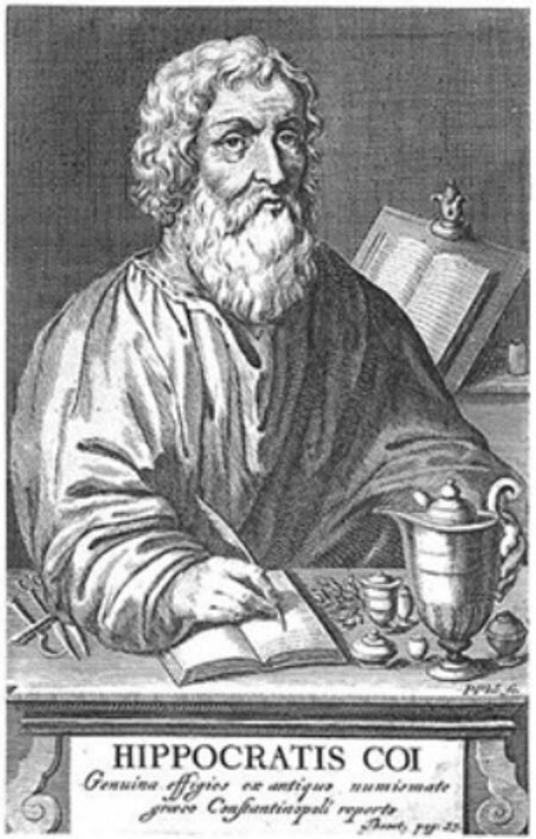
Storia della nutraceutica



"...le differenze nelle malattie dipendono dall'alimentazione"

Ippocrate (460-377 a.C.)

Journal of Pain Research

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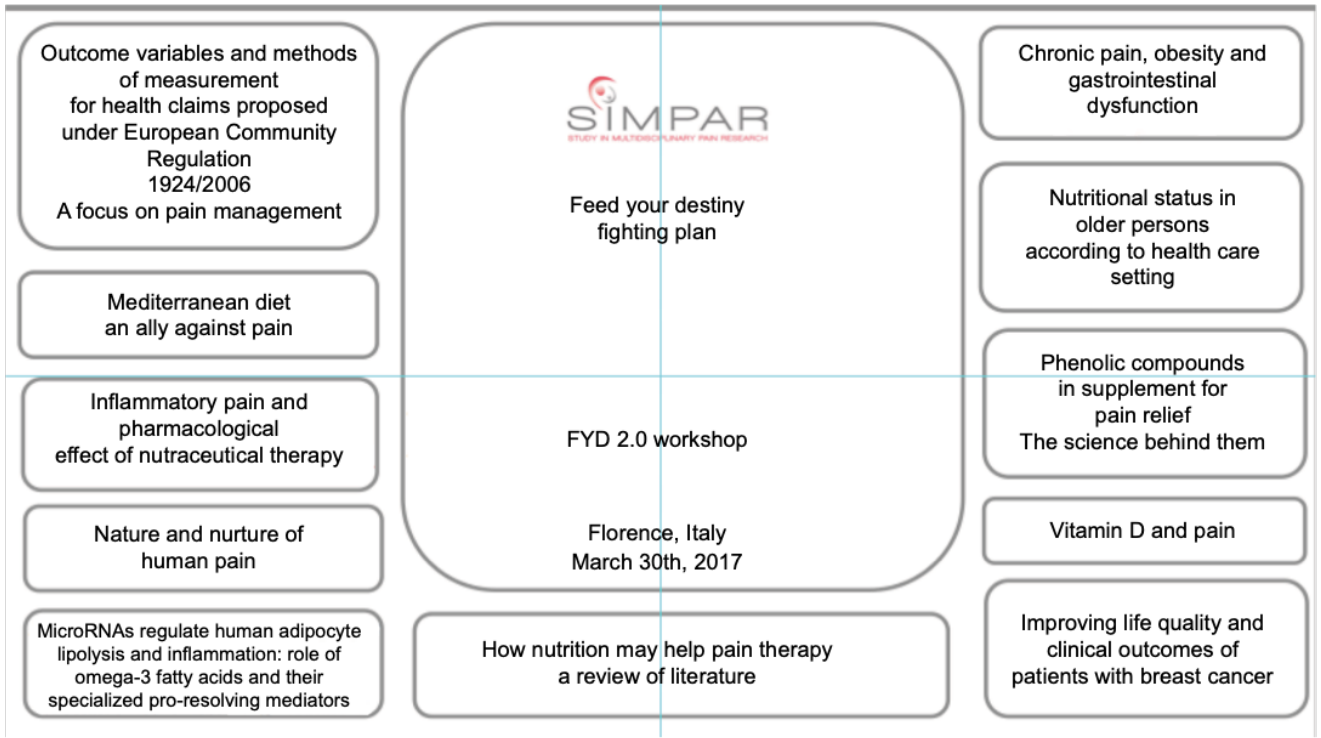
REVIEW

Second edition of SIMPAR's "Feed Your Destiny" workshop: the role of lifestyle in improving pain management



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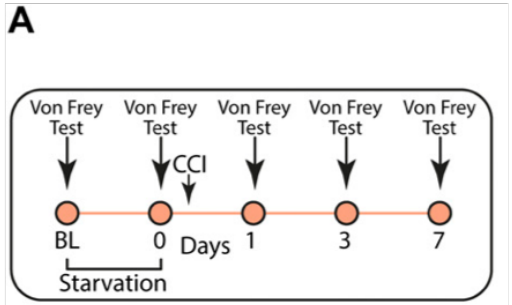
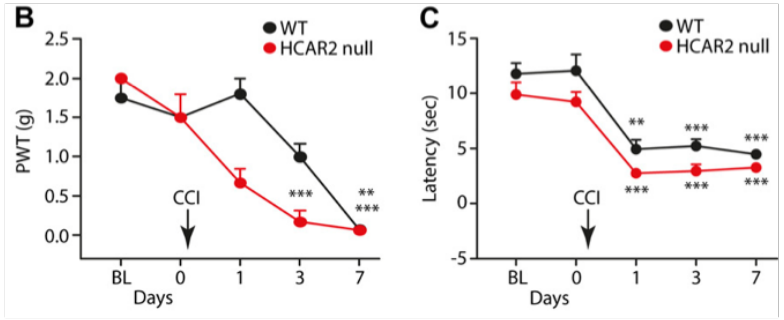
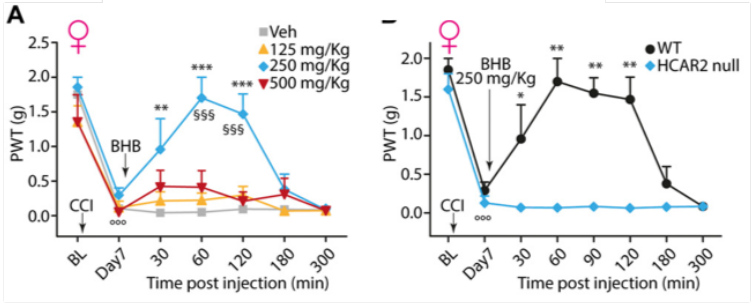
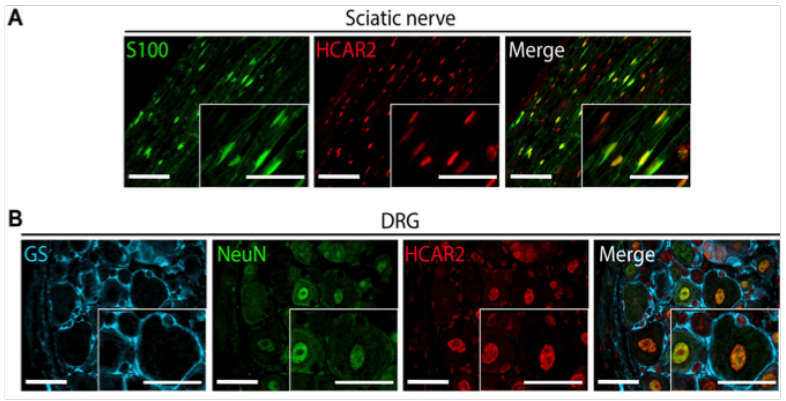
Ketones and pain: unexplored role of hydroxyl carboxylic acid receptor type 2 in the pathophysiology of neuropathic pain

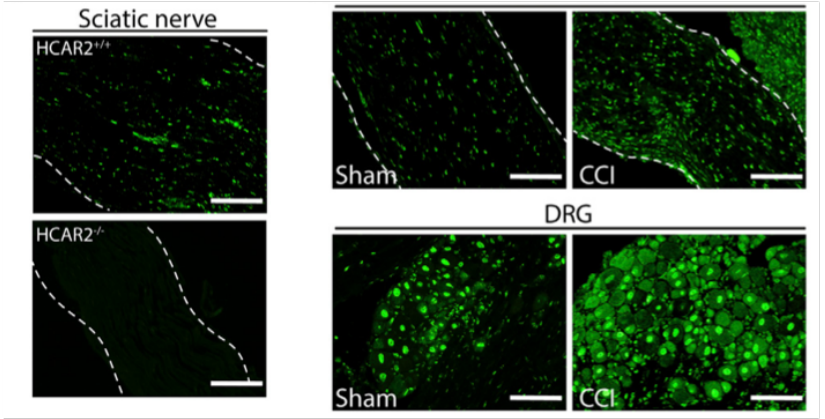
Serena Boccella,* Francesca Guida,* Francesco De Logu,† Danilo De Gregorio,‡ Mariacristina Mazzitelli,§ Carmela Belardo,* Monica Iannotta,* Nicola Serra,¶ Romina Nassini,† Vito de Novellis,* Pierangelo Geppetti,† Sabatino Maione,*,1 and Livio Luongo*,2

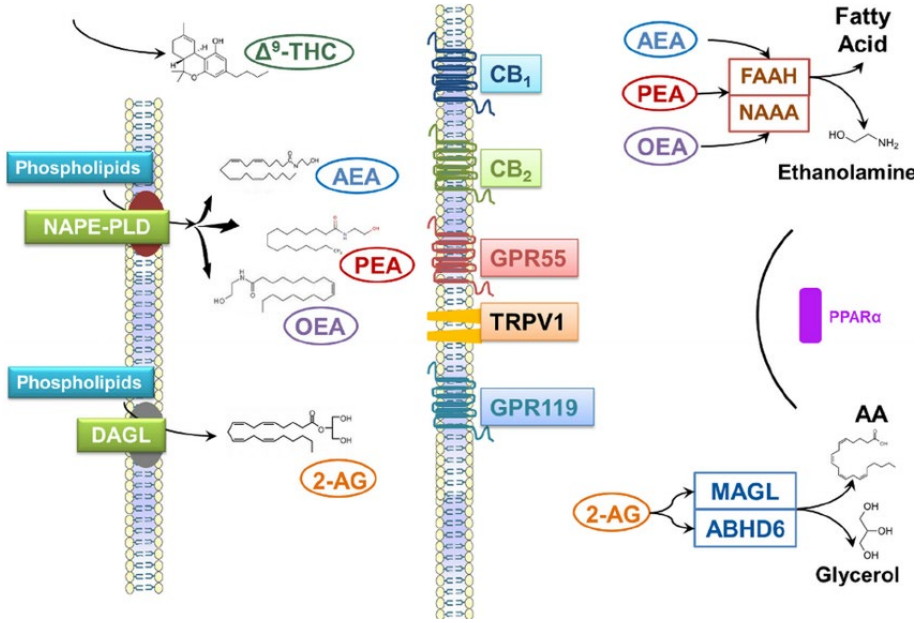


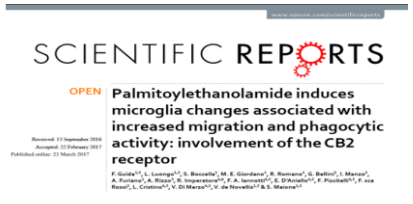




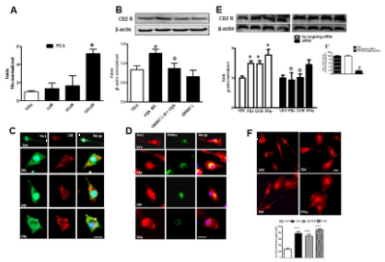






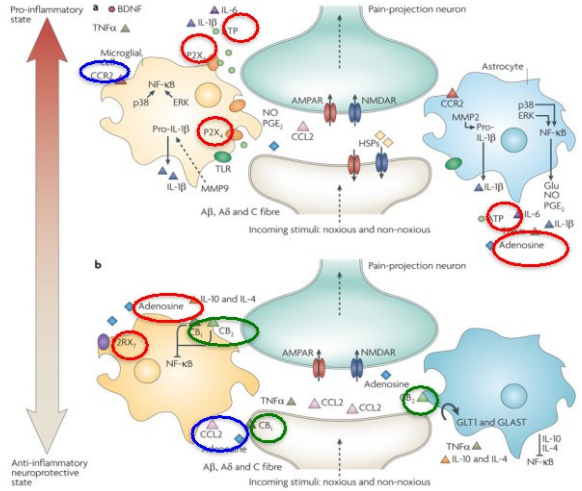


PEA increases the CB2R expression in cultured microglia



Guida et al., Scie. Rep., 2017

Factors regulating microglial phenotypes

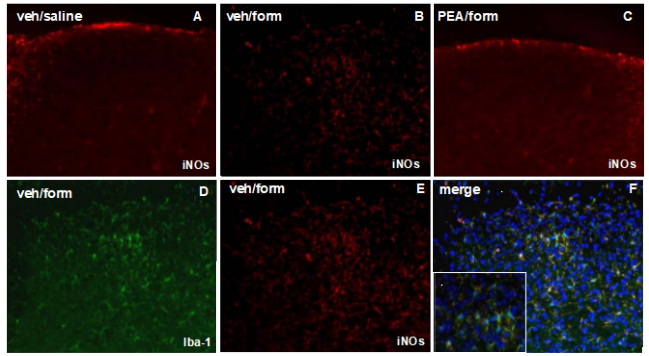


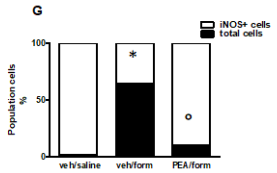
Milligan and Watkins, 2009

CNS & Neurological Disorders - Drug Targets, 2013, 12, 45-54 45

Palmitoylethanolamide Reduces Formalin-Induced Neuropathic-Like Behaviour Through Spinal Glial/Microglial Phenotypical Changes in Mice

Livio Luongo[1,§], Francesca Guida[1,§], Serena Boccella[1], Giulia Bellini[1], Luisa Gatta[1], Francesca Rossi[2], Vito de Novellis[1] and Sabatino Maione[*,1]





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journal homepage: www.elsevier.com/locate/ynbdi

Ultra-micronized palmitoylethanolamide rescues the cognitive decline-associated loss of neural plasticity in the neuropathic mouse entorhinal cortex-dentate gyrus pathway

Serena Boccella[a,1], Claudia Cristiano[b,1], Rosaria Romano[a], Monica Iannotta[a], Carmela Belardo[a], Antonio Farina[a], Francesca Guida[a], Fabiana Piscitelli[c], Enza Palazzo[a], Mariacristina Mazzitelli[d], Roberta Imperatore[c], Lea Tunisi[a], Vito de Novellis[a], Luigia Cristino[c], Vincenzo Di Marzo[c], Antonio Calignano[a], Sabatino Maione[a], Livio Luongo[a,*]

[a] Department of Experimental Medicine, Pharmacology Division, University of Campania "L. Vanvitelli", 80138 Naples, Italy
[b] Department of Pharmacy, School of Medicine, University of Naples Federico II, Naples, Italy
[c] Endocannabinoid Research Group, Institute of Biomolecular Chemistry, CNR, Pozzuoli, Italy
[d] Department of Pharmacology and Neuroscience, Texas Tech University Health Sciences Center, Lubbock, TX
[e] Department of Science and Technology, University of Sannio, Benevento, Italy

S. Boccella et al. / Neurobiology of Disease 121 (2019) 106–119

ARTICLE INFO

Keywords:
Spared nerve injury
Palmitoylethanolamide
long term potentiation
PPARα
cognitive performance
synaptogenesis

ABSTRACT

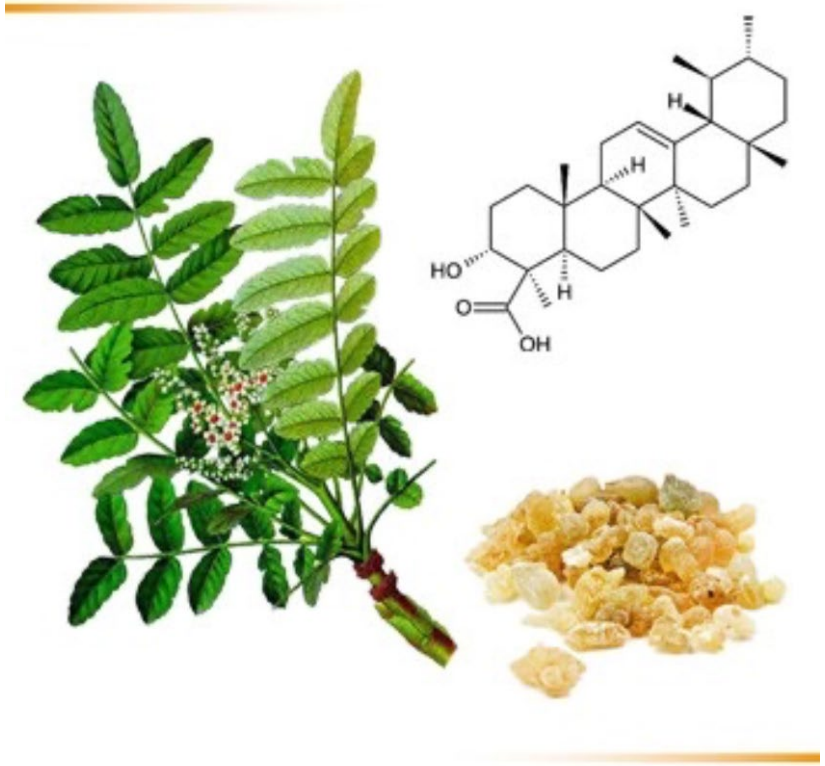
Chronic pain is associated with cognitive deficits. Palmitoylethanolamide (PEA) has been shown to ameliorate pain and pain-related cognitive impairments by restoring glutamatergic synapses functioning in the spared nerve injury (SNI) of the sciatic nerve in mice. SNI reduced mechanical and thermal threshold, spatial memory and LTP at the lateral entorhinal cortex (LEC)-dentate gyrus (DG) pathway. It decreased also postsynaptic density, volume and dendrite arborization of DG and increased the expression of metabotropic glutamate receptor 1 and 7 (mGluR1 and mGluR7), of the GluR1, GluR1S845 and GluR1S831 subunits of AMPA receptor and the levels of glutamate in the DG. The level of the endocannabinoid 2-arachidonoylglycerol (2-AG) was instead increased in the LEC. Chronic treatment with PEA, starting from when neuropathic pain was fully developed, was able to reverse mechanical allodynia and thermal hyperalgesia, memory deficit and LTP in SNI wild type, but not in PPARα null, mice. PEA also restored the level of glutamate and the expression of phosphorylated GluR1 subunits, postsynaptic density and neurogenesis. Altogether, these results suggest that neuropathic pain negatively affects cognitive behavior and related LTP, glutamatergic synapse and synaptogenesis in the DG. In these conditions PEA treatment alleviates pain and cognitive impairment by restoring LTP and synaptic maladaptative changes in the LEC-DG pathway. These outcomes open new perspectives for the use of the N-acylethanolamines, such as PEA, for the treatment of neuropathic pain and its central behavioural sequelae.

1. Introduction

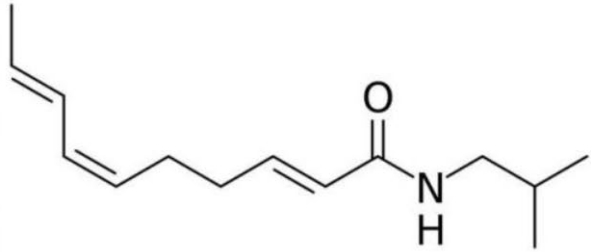
In the last two decades most of studies on chronic pain-related synaptic plasticity changes underlying cognitive/affective consequences (Ikeda et al., 2015; Moriarty et al., 2016) have been focused on cortical (Giovanni et al., 2012; Gustin et al., 2012) and non-cortical supraspinal structures (Grilli, 2017; Thompson & Neugebauer, 2017). How, chronic pain influences the hippocampus (archicortex) is still little investigated (Gol & Fulbish, 1966). The hippocampus belongs to the Papez circuit, a neural network that, by connecting the hypothalamus to the limbic areas, represents the anatomical substrate for emotional experiences involved in learning, memory and motivation (Senalynne, 2013). Persistent pain altered hippocampus neuron function (Ikonen & Riekkinen, 1999; Van der Staay et al., 2000) whereas neuropathic pain reduced synaptic plasticity (LTP or STP) at dentate gyrus (DG), CA1 or CA3 synapses (Kodama et al., 2007; Ren et al., 2011; Mutso et al., 2012), as well as DG neurogenesis (Bellinzoli et al., 2014) and activated mTOR pathways (Kwon et al., 2017). Much of the cortical information that arrives at the hippocampus enters through the entorhinal cortex, and much of the return projection to the neocortex arises from the

https://doi.org/10.1016/j.nbd.2018.09.023
Received 27 July 2018; Received in revised form 10 September 2018; Accepted 24 September 2018

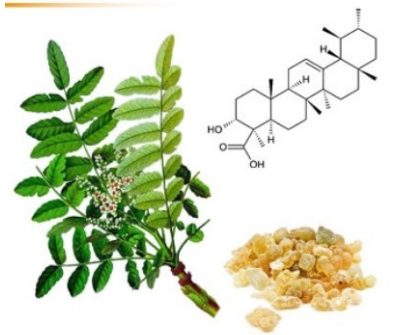
Boswellia Serrata



Acmella Olaracea



Boswellia Serrata



Phytomedicine 108 (2023) 154540

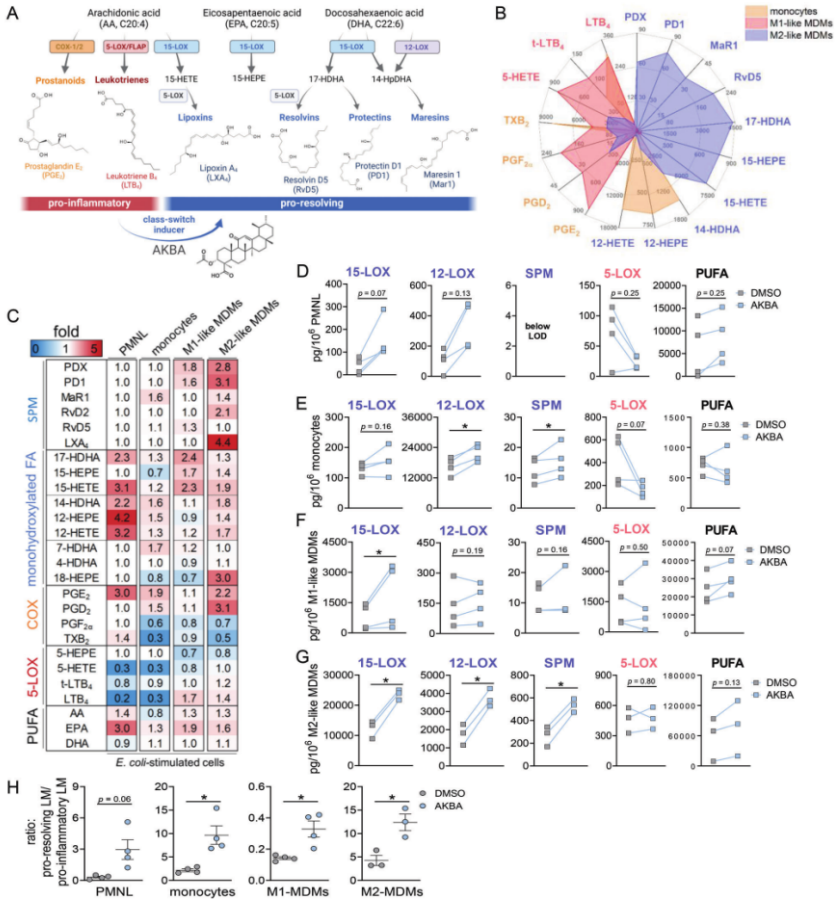
RESEARCH ARTICLE

ADVANCED SCIENCE

www.advancedscience.com

Allosteric Activation of 15-Lipoxygenase-1 by Boswellic Acid Induces the Lipid Mediator Class Switch to Promote Resolution of Inflammation

*Friedemann Börner, Simona Pace, Paul M. Jordan, Jana Gerstmeier, Mario Gomez, Antonietta Rossi, Nathaniel C. Gilbert, Marcia E. Newcomer, and Oliver Werz**



Acmella Olaracea

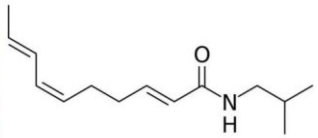


Figure 3: Dose response curves on the inhibitory potency on FAAH inhibition assay.

Journal of Nutrition & Food Sciences

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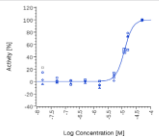
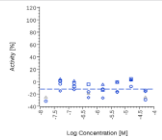
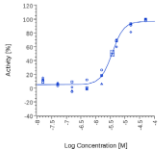
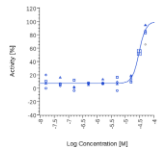
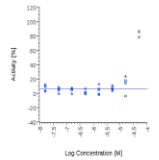
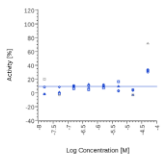
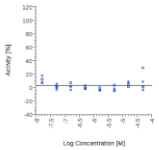
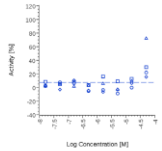
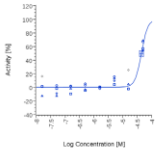
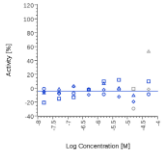
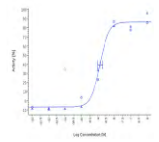
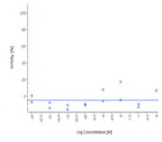
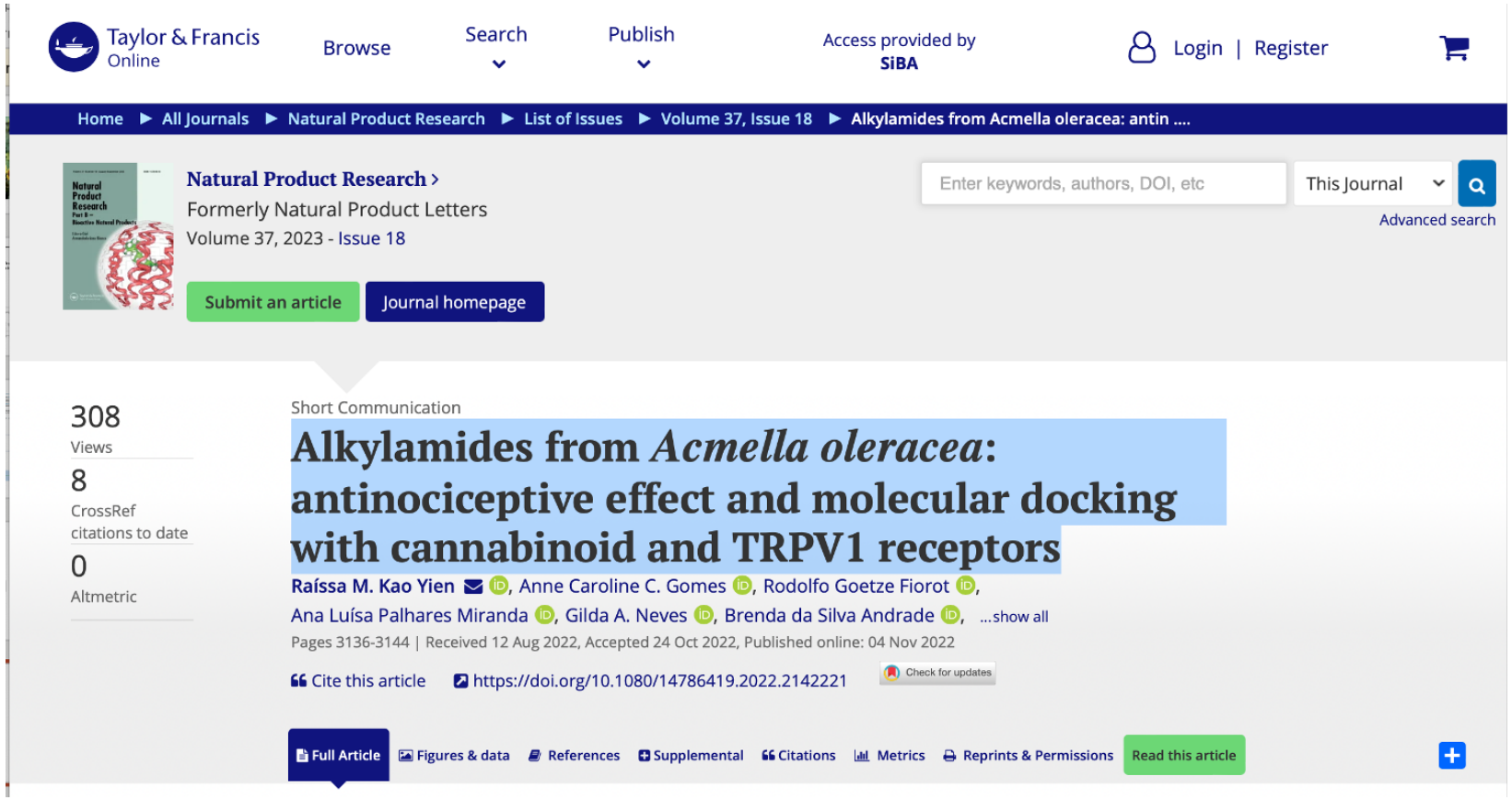
Research Article

Targeting Cannabinoid Receptors and Fatty Acid Amide Hydrolase: An Innovative Food-Grade Delivery System of *Zingiber officinale* and *Acmella oleracea* Extracts as Natural Adjuvant in Pain Management

Giovanna Petrangolini[1], Fabio Donzelli[1], Davide Berlanda[1], Pietro Allegrini[1], Andrea Rossignoli[2], Michela Stucchi[2], Antonella Riva[2]*

Table 3: Potency (EC_{50}) on human CB2 cell based assay.

Sample	Human CB2 cells		Mock cells	
	EC_{50}	Dose response curves	EC_{50}	Dose response curves
Acmella oleracea	12 µg/ml		N.E.	
Spilanthol	3.66 µM		30.1 µM	
Zingiber officinalis	N.E.		N.E.	
6-Gingerol	N.E.		N.E.	
Mandol	44.1 µg/ml		N.E.	
HU210	1.35 nM		N.E.	



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Short Communication

Alkylamides from *Acmella oleracea*: antinociceptive effect and molecular docking with cannabinoid and TRPV1 receptors

Raíssa M. Kao Yien, Anne Caroline C. Gomes, Rodolfo Goetze Fiorot, Ana Luísa Palhares Miranda, Gilda A. Neves, Brenda da Silva Andrade, ...show all

Pages 3136-3144 | Received 12 Aug 2022, Accepted 24 Oct 2022, Published online: 04 Nov 2022

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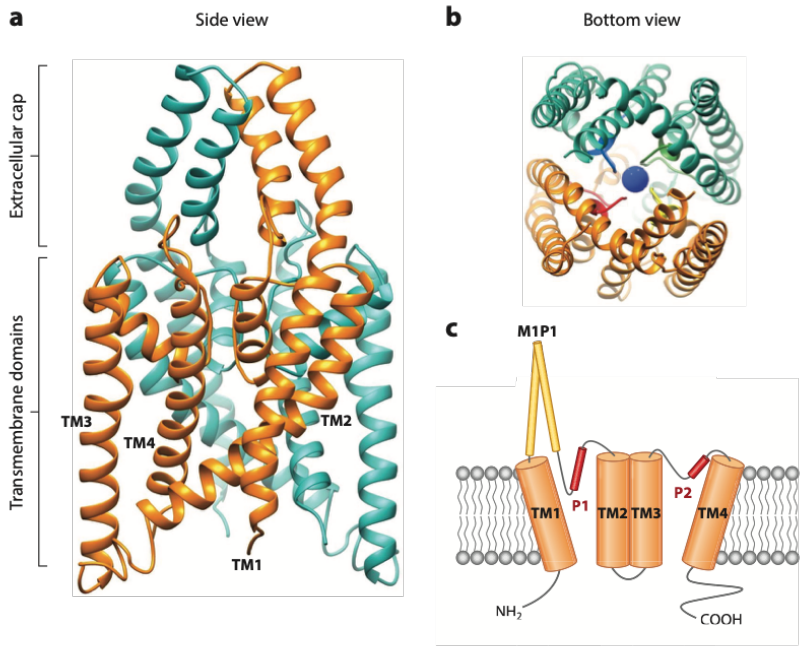
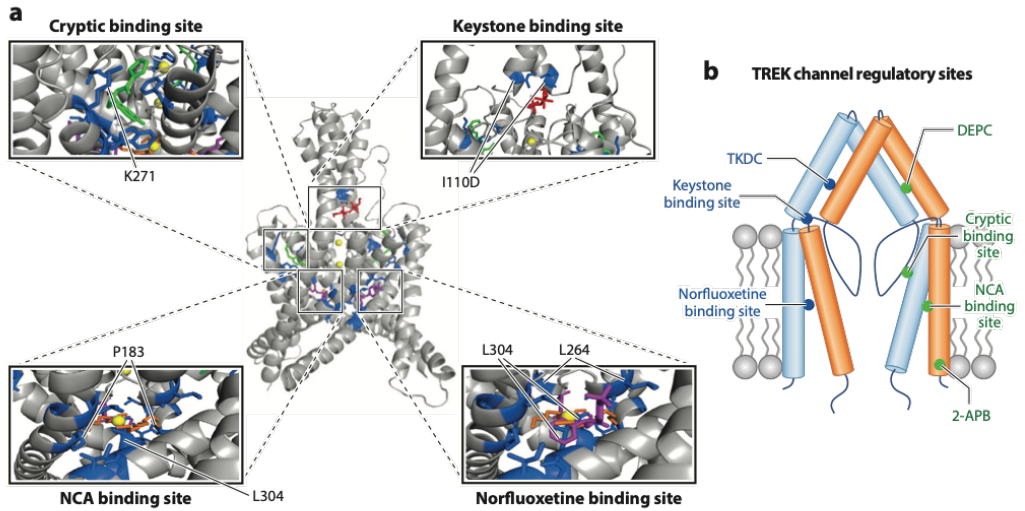
General structural features of two-pore domain potassium (K2P) channels: The tingling receptors





Mathie et al., 2021

Table 1 Classification and indicative roles of mammalian K2P channels

Family	Channel	Formal name	Gene name	Indicative physiological and/or pathophysiological roles	Reference(s)
TWIK	TWIK-1	$K_{2P}1.1$	*KCNK1*	Renal water and phosphate reabsorption, astrocyte leak current	1, 16, 20
	TWIK-2	$K_{2P}6.1$	*KCNK6*	Hypertension and vascular dysfunction	141
	KCNK7	$K_{2P}7.1$	*KCNK7*	Unknown	NA
TREK	TREK-1	$K_{2P}2.1$	*KCNK2*	Depression, ischemia, nociception, myelinated axons, general anesthesia, ventricular tachycardia, cardiac fibrosis, migraine	See text
	TREK-2	$K_{2P}10.1$	*KCNK10*	Nociception	See text
	TRAAK	$K_{2P}4.1$	*KCNK4*	Myelinated axons, postsurgical neuropathic pain	27, 105, 140
TASK	TASK-1	$K_{2P}3.1$	*KCNK3*	Aldosterone secretion, respiratory stimulation, atrial fibrillation, inflammation, pulmonary hypertension, sleep apnea	See text
	TASK-3	$K_{2P}9.1$	*KCNK9*	Aldosterone secretion, respiratory stimulation, cancer, BBMRS, inflammation, pain, general anesthesia, sleep duration	See text
	TASK-5	$K_{2P}15.1$	*KCNK15*	Unknown	NA
TALK	TASK-2	$K_{2P}5.1$	*KCNK5*	Renal volume control, migraine, Balkan endemic nephropathy	20, 142, 143
	TALK-1	$K_{2P}16.1$	*KCNK16*	Insulin secretion	42
	TALK-2	$K_{2P}17.1$	*KCNK17*	Cardiac conduction disorder	144
THIK	THIK-1	$K_{2P}13.1$	*KCNK13*	Microglial surveillance	32
	THIK-2	$K_{2P}12.1$	*KCNK12*	Unknown	NA
TRESK	TRESK	$K_{2P}18.1$	*KCNK18*	Migraine, nociception	112, 138, 139

Mathie et al., 2021

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ANNUAL REVIEWS

Annual Review of Pharmacology and Toxicology

Two-Pore Domain Potassium Channels as Drug Targets: Anesthesia and Beyond

Alistair Mathie,[1] Emma L. Veale,[1] Kevin P. Cunningham,[2] Robyn G. Holden,[1] and Paul D. Wright[3]

[1]Medway School of Pharmacy, University of Greenwich and University of Kent, Kent ME4 4TB, United Kingdom; email: a.a.mathie@kent.ac.uk

[2]Wolfson Centre for Age-Related Diseases, King's College London, London SE1 1UL, United Kingdom

[3]LifeArc, Stevenage SG1 2FX, United Kingdom

Received: 28 October 2019 | Revised: 6 July 2020 | Accepted: 3 August 2020

DOI: 10.1111/bph.15243

RESEARCH PAPER

BJP BRITISH PHARMACOLOGICAL SOCIETY

TREK1 channel activation as a new analgesic strategy devoid of opioid adverse effects

Jérôme Busserolles[1,2] | Ismail Ben Soussia[3] | Laetitia Pouchol[1,2] | Nicolas Marie[4] | Mathieu Meleine[1,2] | Maïly Devilliers[1,2] | Céline Judon[1,2] | Julien Schopp[1,2] | Loïc Clémenceau[4] | Laura Poupon[1,2] | Eric Chapuy[1,2] | Serge Richard[5] | Florence Noble[4] | Florian Lesage[3] | Sylvie Ducki[6] | Alain Eschalier[1,2] | Stéphane Lolignier[1,2]

Chemical Senses, 2019, Vol 44, 91—103
doi:10.1093/chemse/bjy069
Original Article
Advance Access publication 26 October 2018

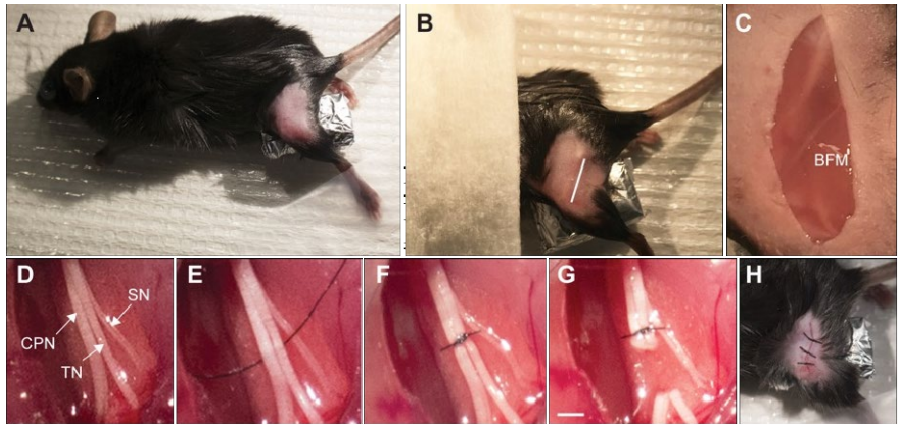
OXFORD

Original Article

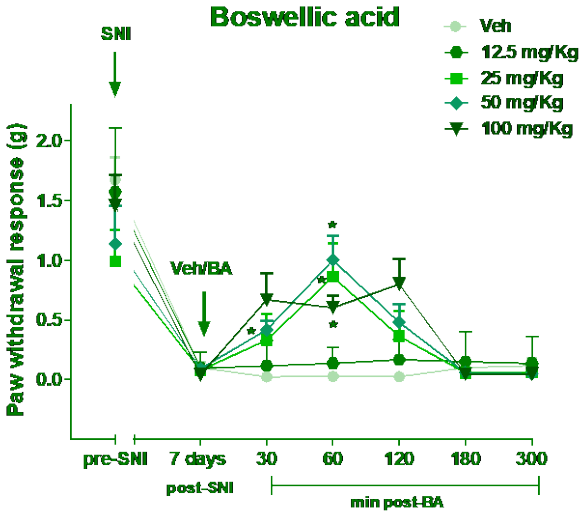
Spilanthol Enhances Sensitivity to Sodium in Mouse Taste Bud Cells

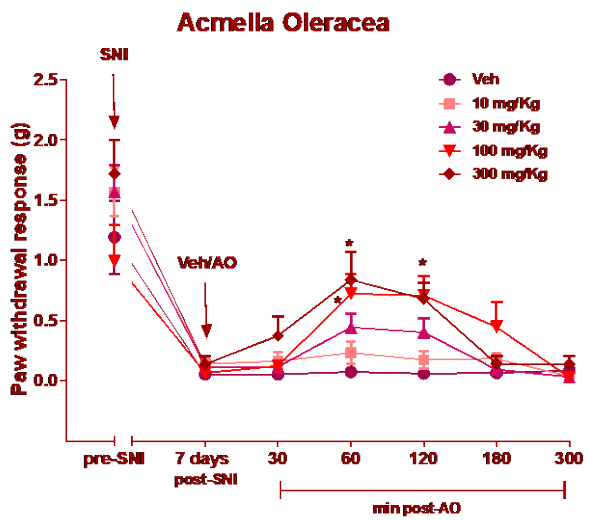
Jiang Xu[1], Brian C. Lewandowski[1], Toshio Miyazawa[2], Yasutaka Shoji[2], Karen Yee[1] and Bruce P. Bryant[1]

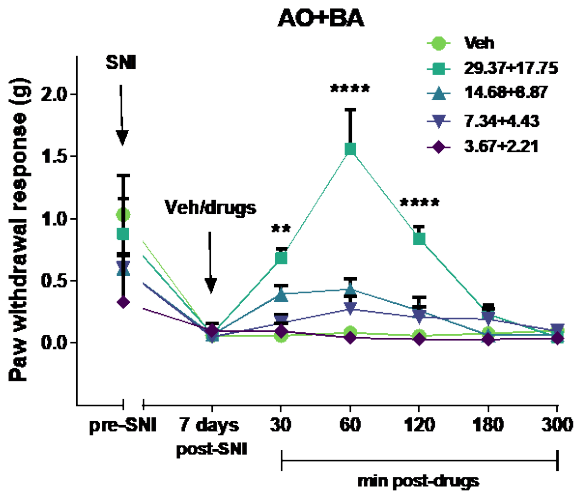
Possible synergistic effect of boswellia serrata and acmella olaracea standardized extracts in the spared nerve injury model of neuropathic pain

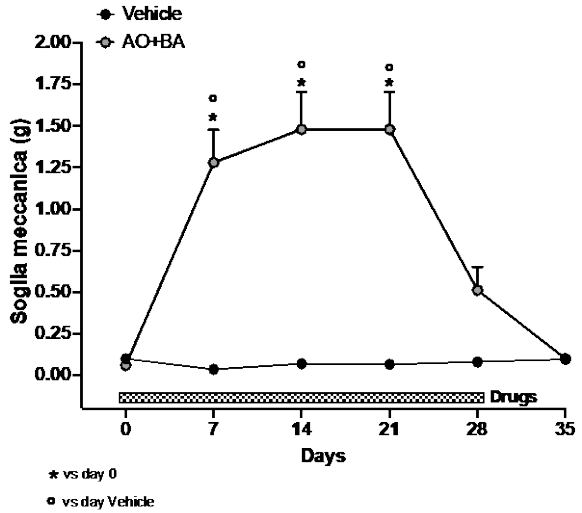


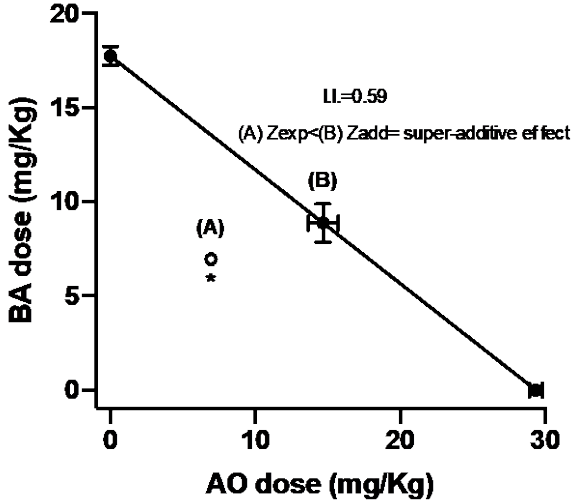
From Cichon et al., 2018





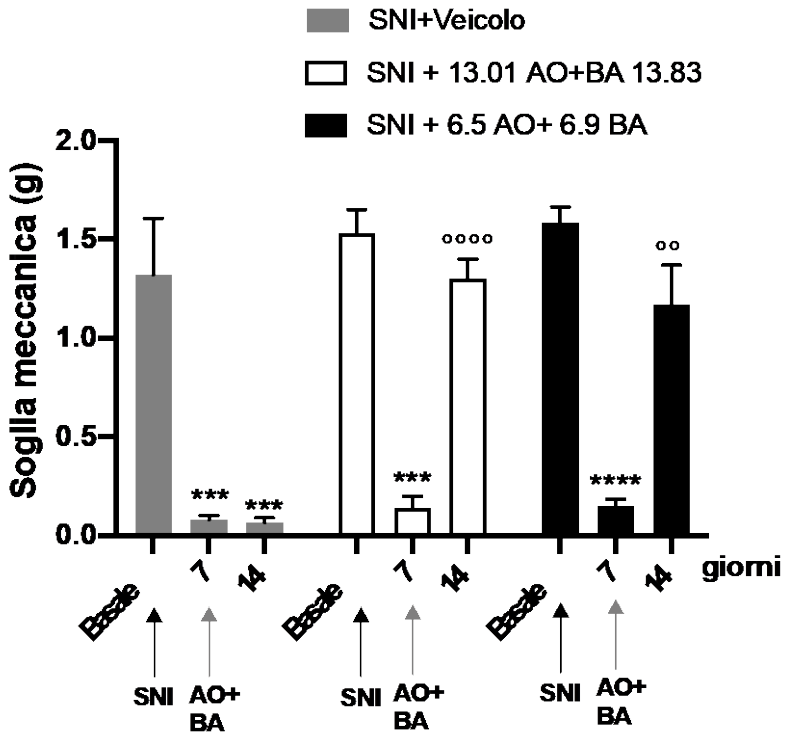




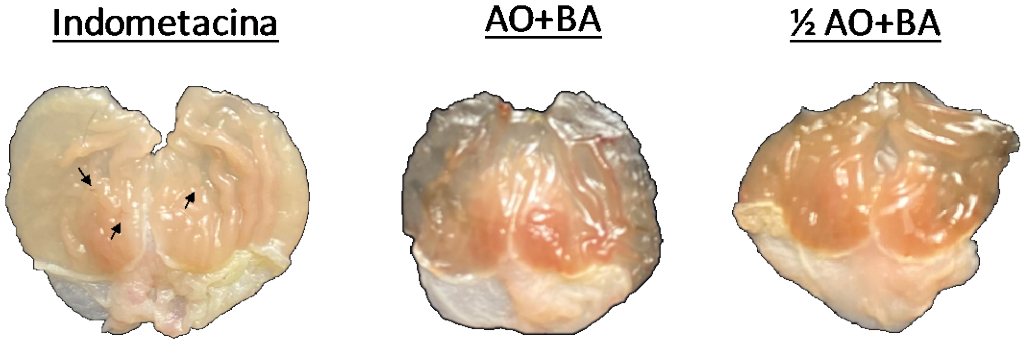


Boccella et al., Phytotherapy research, 2024

Repeated administration of AO/BS reduced tactile allodynia without affecting the gastric mucosa



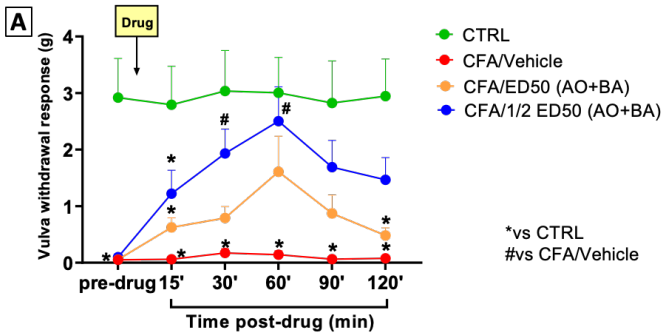
Somministrazioni ripetute di AO+BA non inducono lesioni della mucosa gastrica

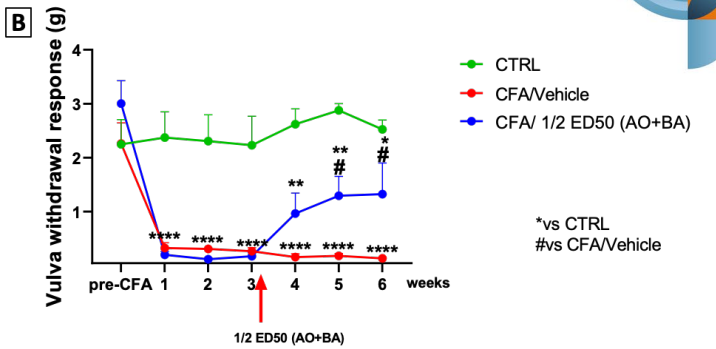


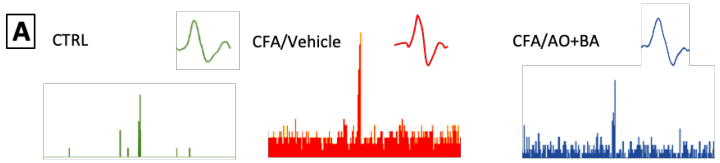
Somministrazioni ripetute della combinazione di AO con BA riducono significativamente l'allodinia meccanica nei topi neuropatici, 7 giorni dall'inizio del trattamento

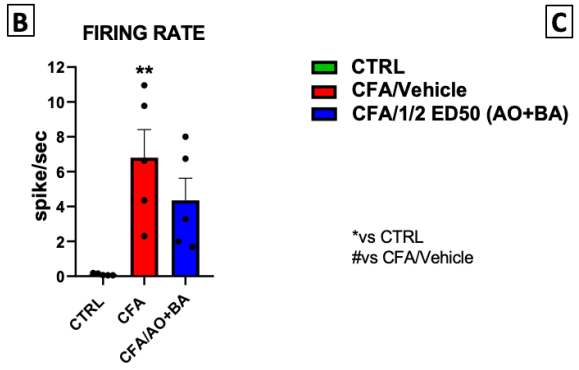
European Society of Regional Anaesthesia & Pain Therapy
ESRA ITALIA
ESRA Italian Chapter
XXIX CONGRESSO NAZIONALE
7-9 Novembre 2024
CESENA, Cesena fiere

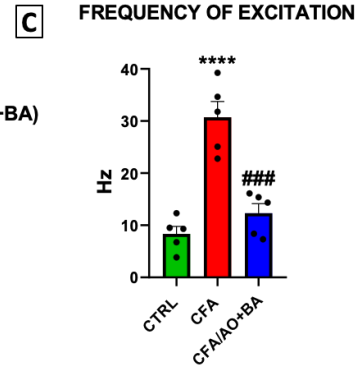
Acmella-boswellia combination in CFA-induced model of vestibulodynia

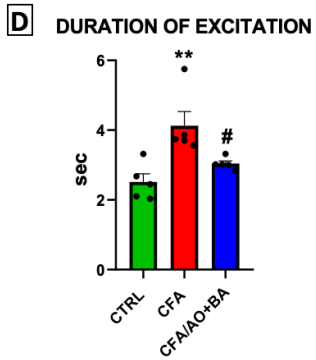


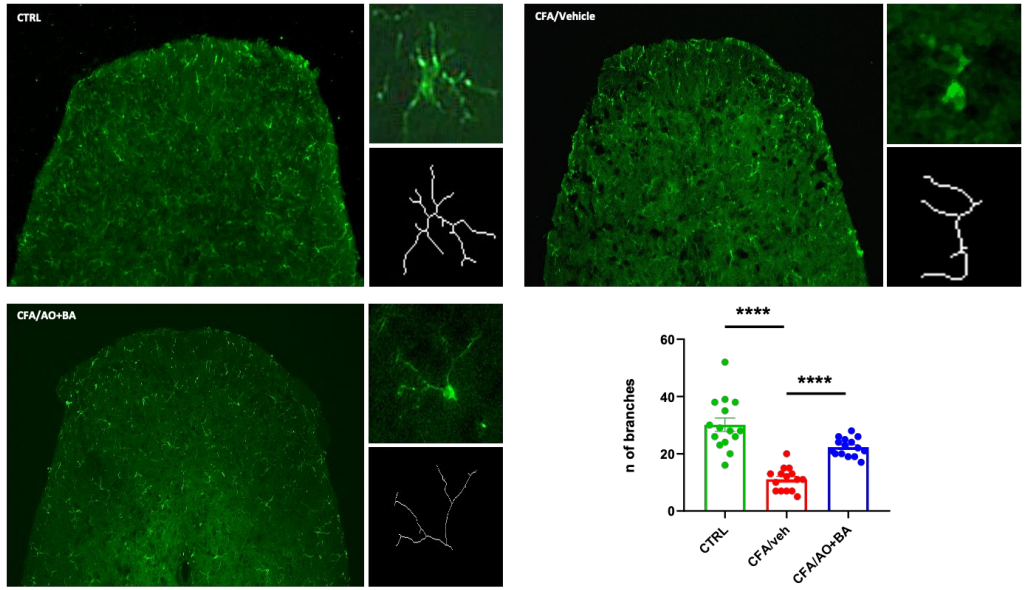








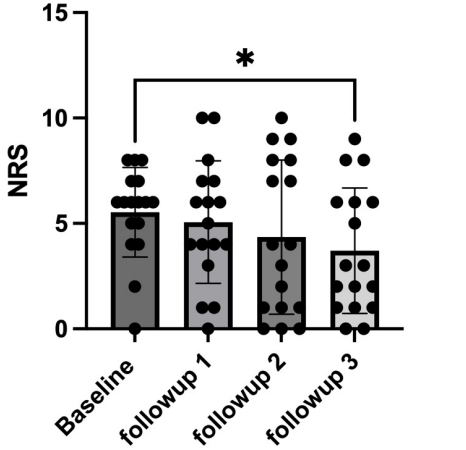


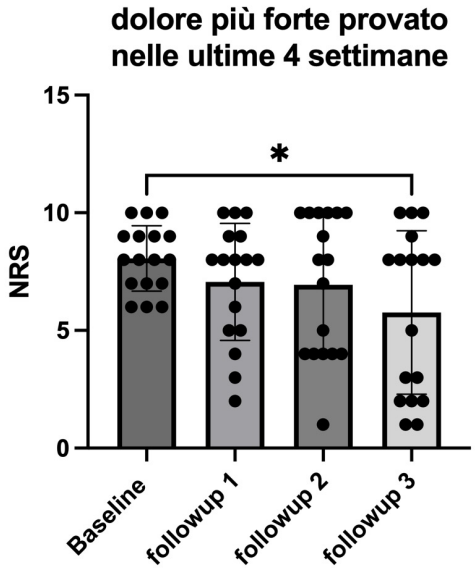


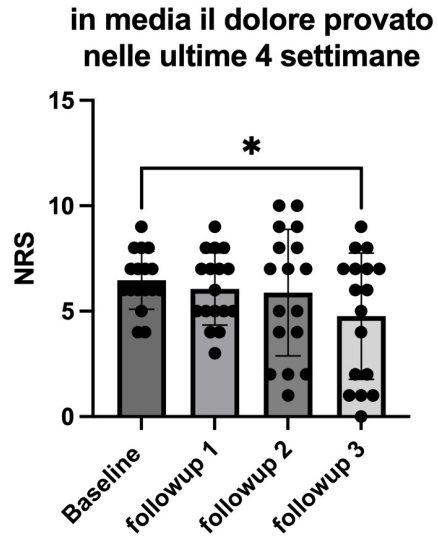
Fusco et al., Frontiers in Pharmacology, Submitted

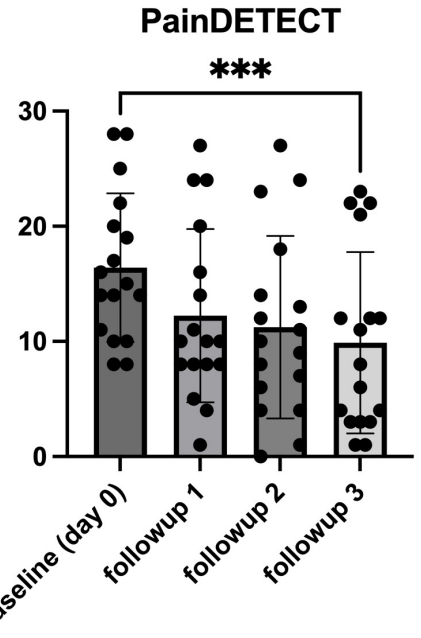
Clinical data:

Combinazione AO/BS come add on therapy in soggetti con dolore cronico con componente neuropatica









Conclusioni:

La combinazione a dosi fisse sinergiche di estratti di acmella olearcea e boswellia serrata

si sta dimostrando un utile adiuvante nella terapia di diverse forme di dolore cronico