THE NEUROPROTECTIVE EFFECTS OF MICRONIZED PEA (PEA-M) FORMULATION ON DIABETIC PERIPHERAL NEUROPATHY IN MICE

Alessio Filippo Peritore[1], Daniela Impellizzeri[1], Rosalba Siracusa[1], Enrico Gugliandolo[1], Roberta Fusco[1], Marika Cordaro[1], Rosalia Crupi[1], Ramona D'Amico[1], Salvatore Cuzzocrea[1], Rosanna Di Paola[1]
[1]Università di Messina, Messina - Italy

Diabetic peripheral neuropathy (DPN) is a very complication of diabetes connected with morbidity and mortality. DPN presents deterioration of peripheral nerves with pain, feebleness and loss of sensation. Particular medications might display their remedial potential by controlling neuroinflammation. Palmitoylethanolamide (PEA) is an ALIAmide distinguished for its neuroprotective, analgesic and anti-inflammatory properties in numerous experimental models of neuroinflammation. Based on these findings, the goal of this work was to better test the neuroprotective effects of a formulation of micronized PEA (PEA-m) in a mouse model of DPN induced by streptozotocin (STZ) injection. Diabetic and control animals received PEA-m (10mg/kg) by oral gavage daily starting 2weeks from STZ injection. After 16weeks, the animals were sacrificed and blood, urine, spinal cord and sciatic nerve tissues were collected. Our results demonstrated that after diabetes induction, PEA-m was able to reduce mechanical, thermal hyperalgesia and motor alterations as well as reduced mast cells activation and nerve growth factor (NGF) expression. In addition, PEA-m decreased neural histological damage, oxidative and nitrosative stress, citokines release, angiogenesis and apoptosis maybe by modulating inflammatory pathways as nuclear factor (NF)-κB.
In conclusion, we demonstrated that PEA-m represents a new therapeutic strategy for neuroinflammation, pain associated to mixed neuropathies.