

Targeting Neuroinflammation Relevant to Alzheimer’s Disease Using *Phyllanthus rotundifolius*-Derived Zinc Oxide Nanoparticles

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INTRODCUTION

Neuroinflammation is a complex inflammatory response, primarily mediated by microglia, astrocytes, and other immune-competent cells.

Ideally, conditions, this response serves as a defense mechanism to remove damaged cells and pathogens, thus maintaining neural homeostasis.

Excess neuroinflammatory activity affects neuronal degeneration, synaptic dysfunction, oxidative stress and BBB disruption

METHODS

Acclimatization
Treatment with p. rotundifolius ethanol extract and PRZNF

Induction of neuroinflammation using lipopolysaccharide

Collection of brain, liver and blood

Histopathology of the liver

Biochemical parameters
Inflammatory makers
Neuromarkers
Histopathology of the brain

RESULTS

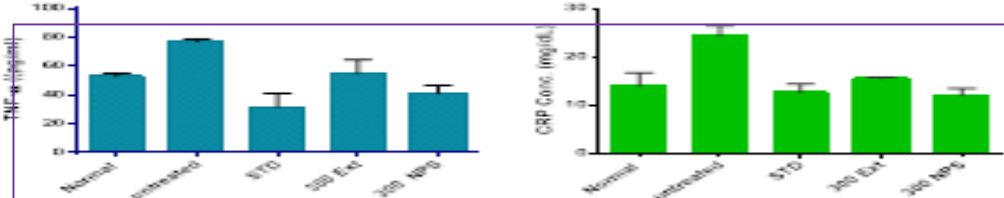


Figure1: Effects of PRZNP on TNF-α and CRP

Table 1: Effects of PRZNP on neuromarkers

Groups	AChE (U/L)	Dopamine (mg/dl)	GABA (mg/dl)	Glutamate (mg/dl)
1	3.68 ± 0.26 ^a	4.94 ± 0.86 ^c	8.13 ± 0.09 ^b	4.33 ± 0.90 ^a
2	6.56 ± 0.33 ^c	1.56 ± 0.33 ^a	6.30 ± 0.16 ^a	8.56 ± 0.32 ^d
3	4.31 ± 0.31 ^b	3.06 ± 0.22 ^b	8.26 ± 0.14 ^b	6.30 ± 0.69 ^c
4	4.56 ± 0.40 ^b	2.72 ± 0.34 ^b	8.22 ± 0.06 ^b	5.67 ± 0.58 ^b
5	3.70 ± 0.31 ^a	2.42 ± 0.16 ^b	8.51 ± 0.37 ^b	4.66 ± 0.30 ^a

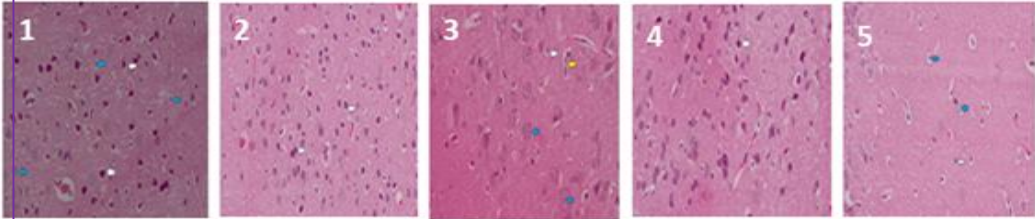


Plate 1: Histopathology of the brain

KEYS: Group 1: Rats neither induced nor treated (normal control)
Group 2: Rats received 10 mg/kg b. w. of LPS and untreated
Group 3: Rats received 200 mg/kg b.w. of ibuprofen (standard drug) + 10 mg/ kg b.w of LPS
Group 4: Rats received 300 mg/kg b.w. of extract + 10 mg/kg b.w. of LPS
Group 5: Rats received 300 mg /kg b. w. PRZNF + 10 mg/kg b.w. of LPS

CONCLUSIONS

PRZNP modulated neuroinflammation induced by LPS by restoring the inflammatory & neuromarkers

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