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PURPOSE

Aspirin or acetylsalicylic acid is one of the most widely used analgesic, antipyretic and anti-inflammatory agents. The present study aims to investigate:

- its possible toxic effect on the retina and
- the possible reversible effect of an NMDA receptor blocker.

MATERIALS AND METHODS

Administration details	GROUP A	GROUP B	GROUP C	GROUP D (Control)
No of Wistar rats	10	10	10	10
Substance	Salicylic acid	Salicylic acid + Memantine	Salicylic acid	None
Route	Intraperitoneally	Intraperitoneally	Intraperitoneally	-
Dose	300 mg/kg/d	300 mg/kg/d + 10 mg/kg/d	600 mg/kg/d	-
Days	5	5	5	-

RESULTS

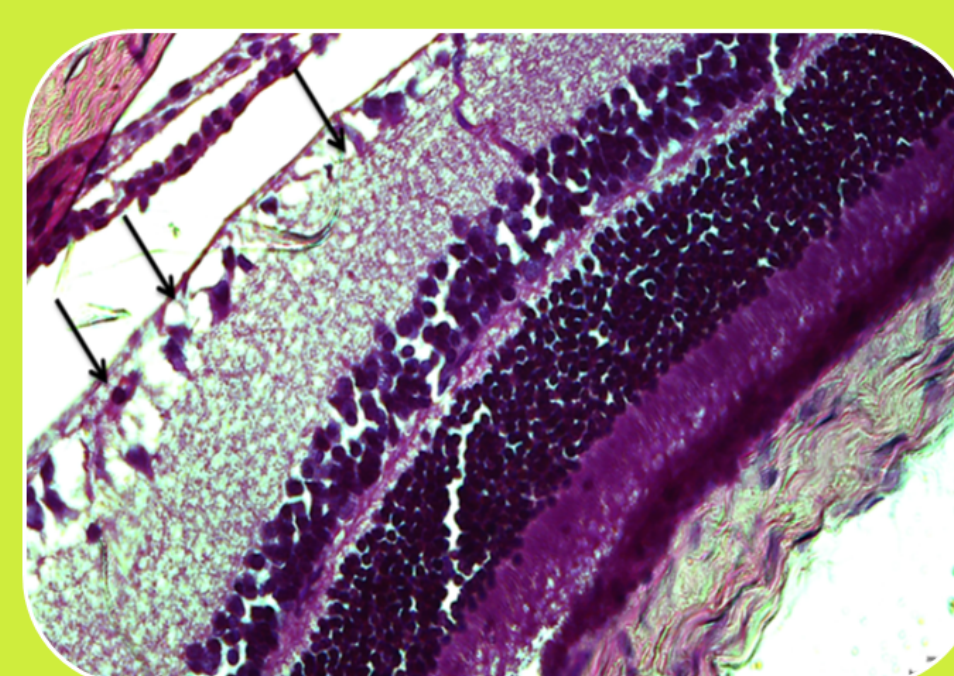
Findings	Group A	Group B	Group C	Group D (Control)
Eosin-hematoxylin staining – Optical Microscopy	Mild architecture disturbances of retinal layers.	No significant findings.	Mild disorders of the architecture of the retinal layers, yet more intense compared to those of Group A.	Normal
Electron Microscopy	Mild localized alterations of retinal layers, mainly in the layer of ganglion cells (edematous) and the arising from them optic nerve fibers.	Reduction of ganglion cells' edema – Retinal layers similar to normal architecture.	Localized destruction of photoreceptors' layer and mild edema of ganglion cells.	Normal

OBSERVATIONS

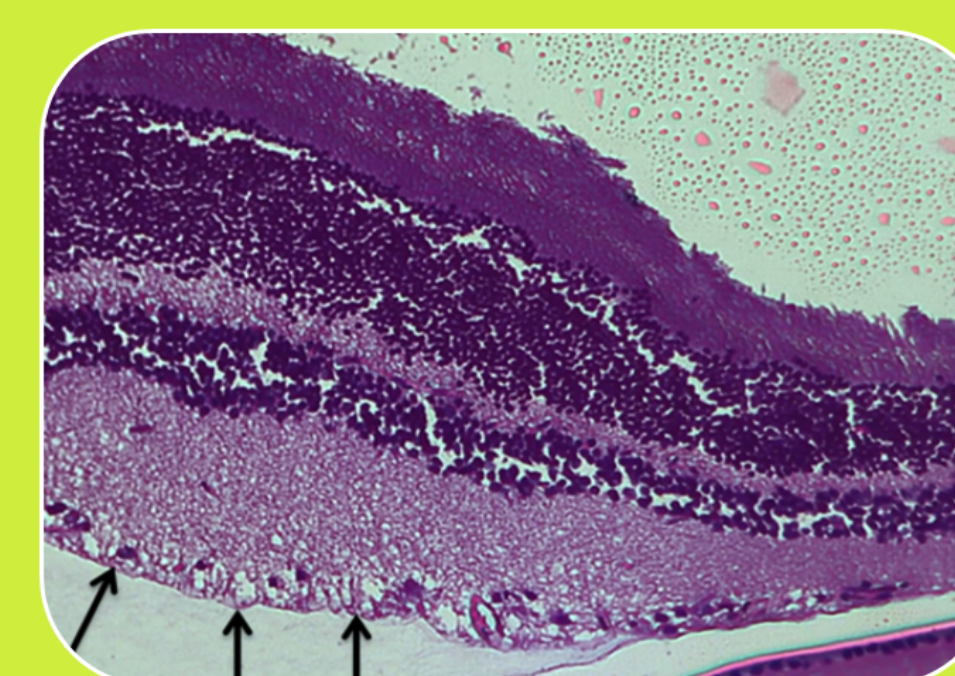
Abbreviations

HE OM: Hematoxylin and Eosin staining in Optical Microscopy
EM: Electron Microscopy

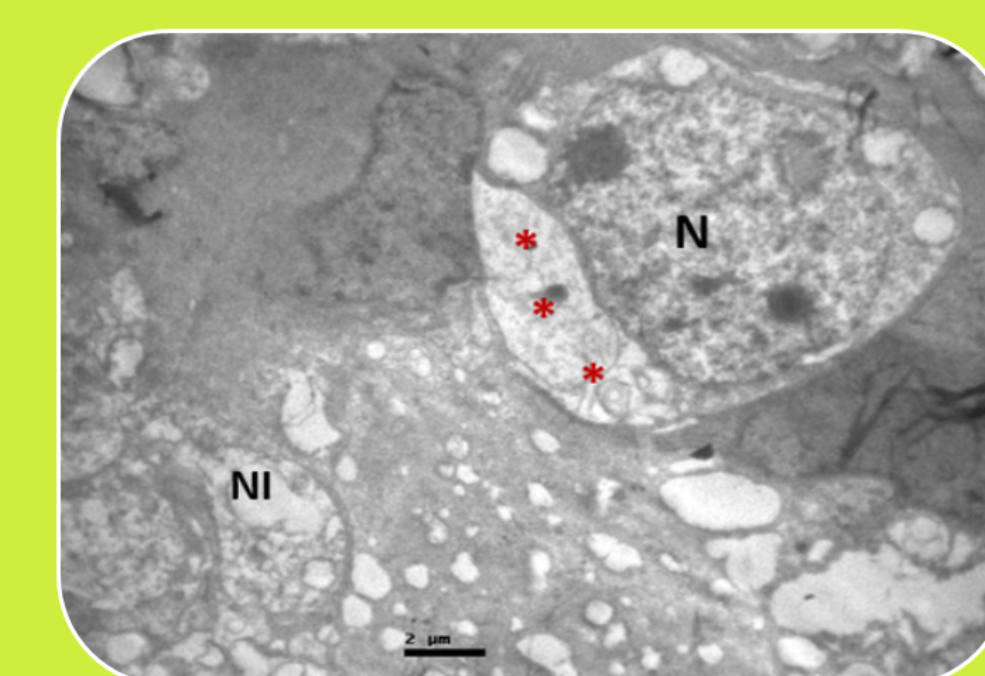
GROUP A



HE OM: Ganglion cells' edema (black arrows)

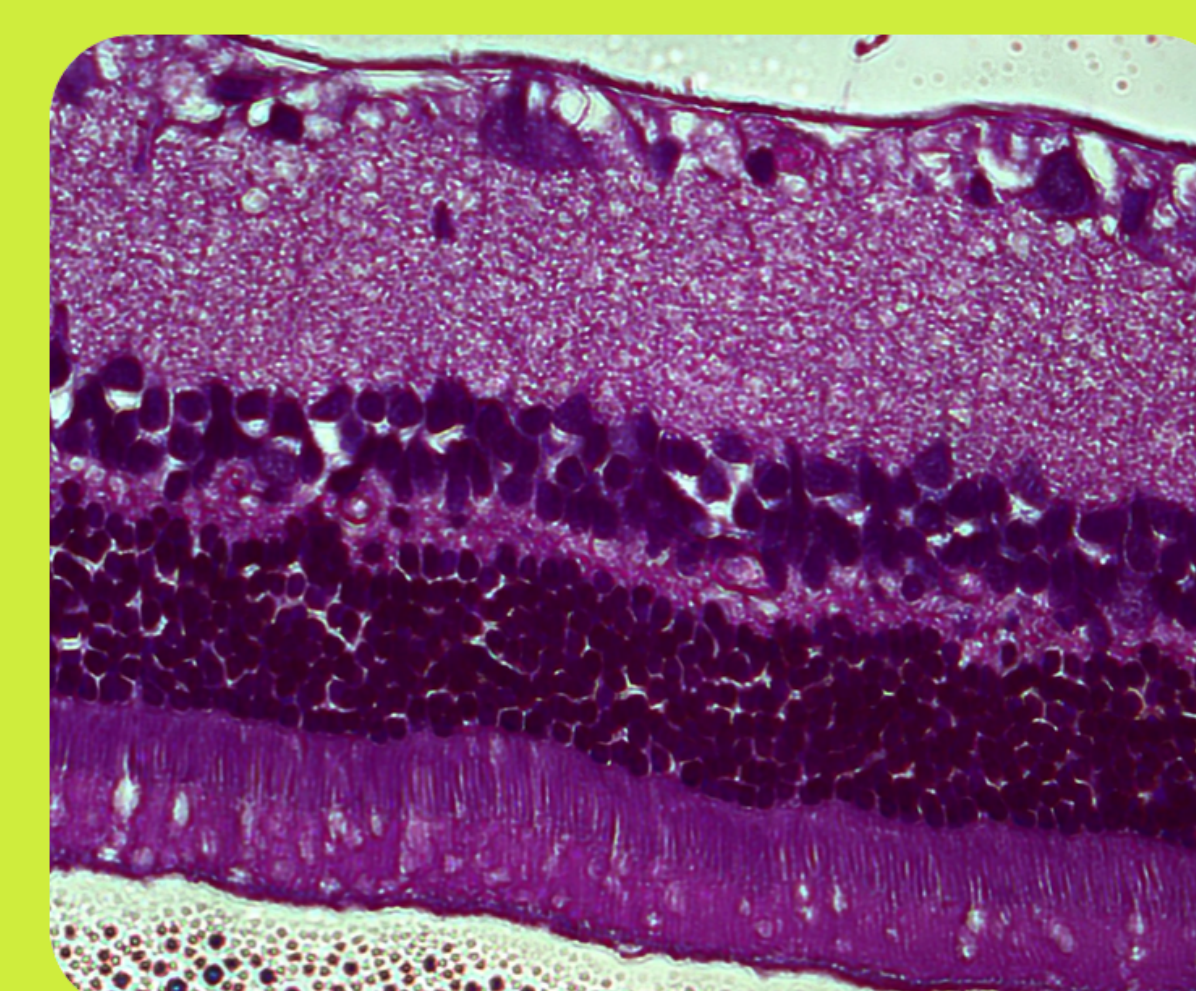


HE OM: Ganglion cells' edema (black arrows)



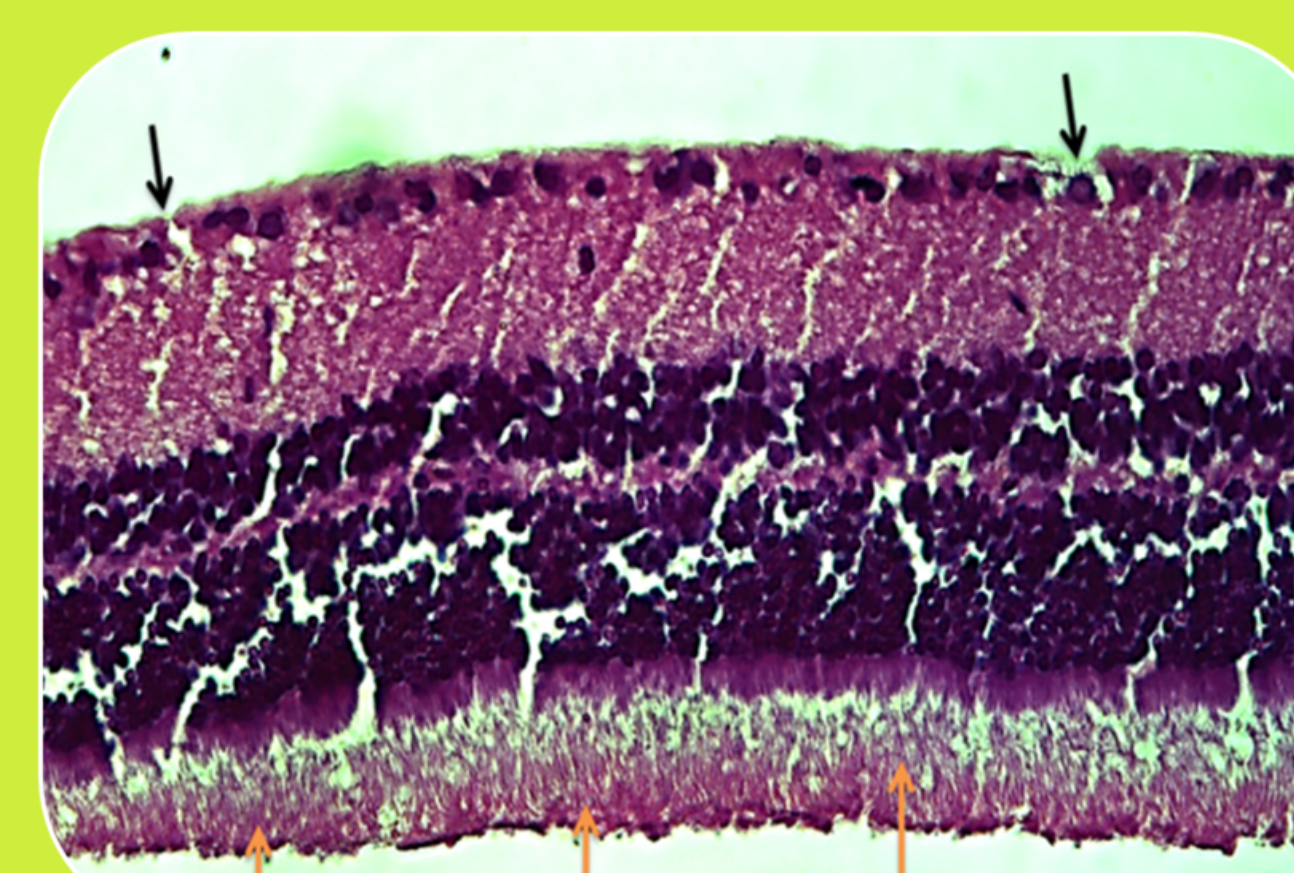
EM: Ganglion cells' edema (red stars); N: nucleus of ganglion cell, NI: optic nerve fibers

GROUP B



HE OM: Recession of ganglion cells' edema

GROUP C

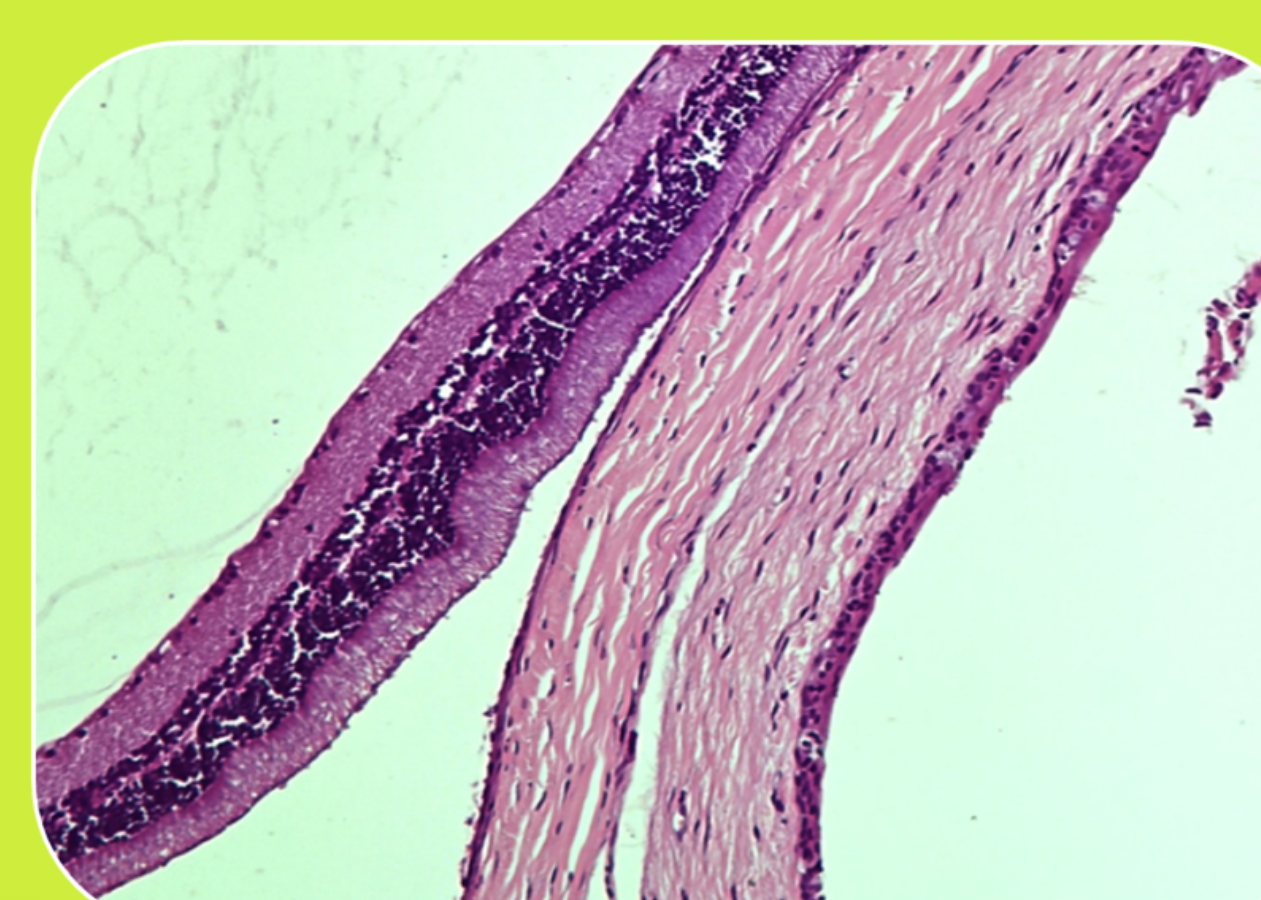


HE OM: Photoreceptors layer architecture alterations (orange arrows) - Localized edema of ganglion cells (black arrows)

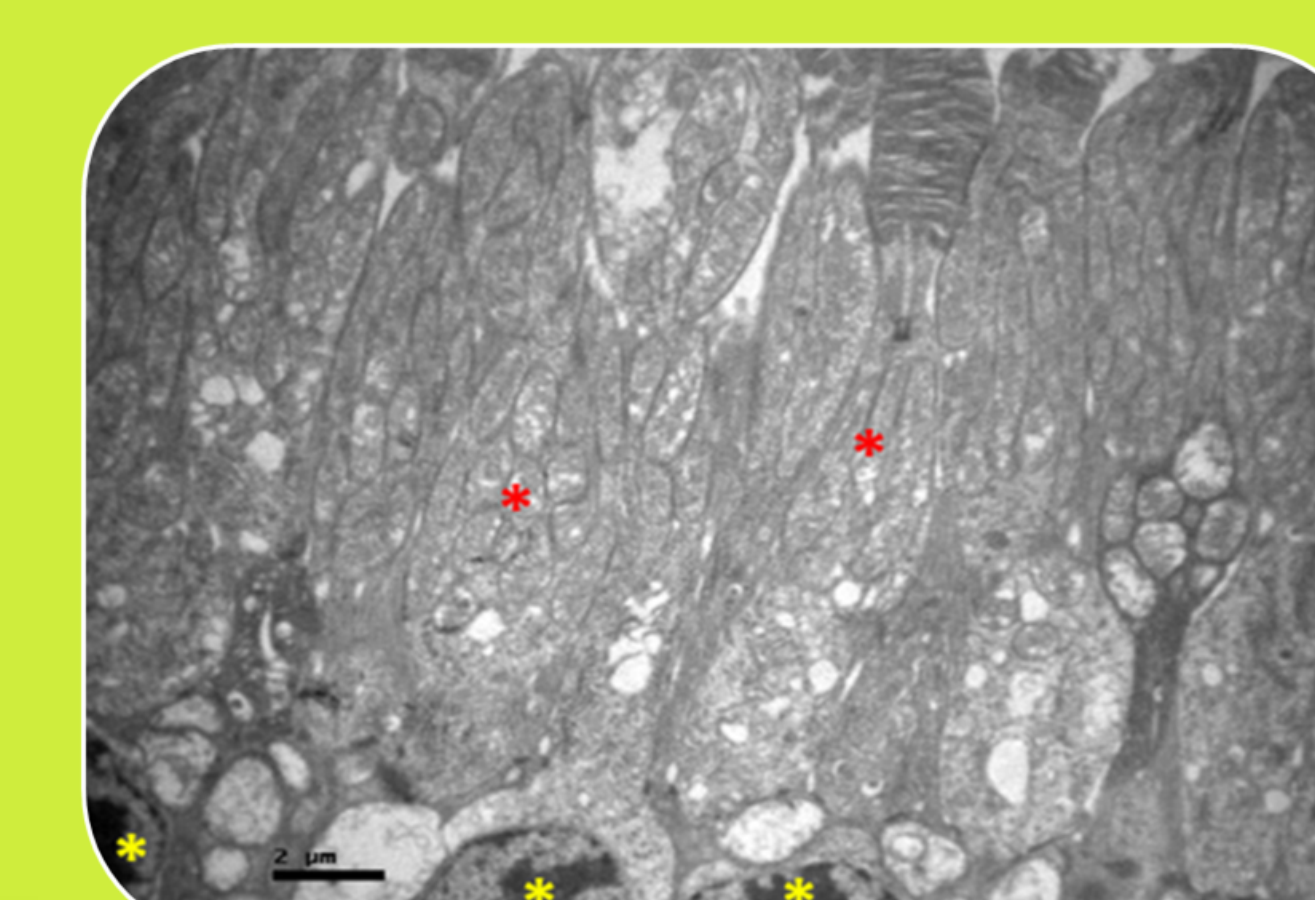


EM: Architectural alteration of photoreceptors layer (orange arrow)

GROUP D (CONTROL)



HE OM: Normal retinal architecture



EM: Normal retinal architecture: photoreceptors (red stars), outer nuclear cells (yellow stars)

CONCLUSIONS

It is worth considering that there are limited literature data on the histological effects on the retina and optic nerve of the systemic administration of salicylate and memantine, combined or not. In our study, both eosin-hematoxylin staining in optical microscopy and electron microscopy observation revealed only mild localized disturbances of the architecture mostly of the photoreceptors' layer as well as ganglion cells' edema. Based on the aforementioned, a potential mild toxic effect of salicylic acid that could be prevented by prophylactic co-administration of an NMDA receptor blocker is to be demonstrated, without setting, however, any reasonable limitations to its safe use in the already established clinical practice.

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