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Taurine & analogues; A new class of retina protector and maintainer

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Taurine, a Sulphur amino acid (SAA), chemically 2Amino Ethane Sulfonic acid is most abundant amino acid in sub-cellular distribution in eyes, from retina to vitreous lens, cornea, iris, ciliary body with highest level in retina more than tenfold to other amino acids mostly concentrated in outmost layers. Majority of mammals don't produce sufficient taurine leading to degeneration changes in photoreceptors and retinal pigment epithelium (RPE) thus endogenous taurine is crucial for preventing retinal neurodegeneration. Adequate levels of taurine can help to prevent age related vision losses. Such losses involve many agents and mechanisms but impact of oxidative stress on light sensing cells in retina is highest. Taurine deficiency is also associated with number of vision problems however many of these problems can be corrected with its supplementation. In addition; taurine deficiency also occurs due to use of certain medicine especially in chemotherapy but taurine supplementation can restore level and protect retina. In gist taurine appears to play an important role in ocular development, increases number of rods photoreceptors in retinal culture via osmoregulation, calcium ion management, prevention from lipid per-oxidation, ROS, NO insults

and some others. Now taurine depletion is also linked with glaucoma and diabetic retinopathy. Efficacy of taurine depends on its uptake in to retinal cells and related structures. Taurine being an amino acid also observe first pass effects which make its slow to cross BBB requiring higher amount for longer duration, to overcome such situation taurine analogues who can release sufficient amount of taurine at site of action is necessary. A large number of analogues have been develop with success to name few; N-Chloro taurine and its methylated derivative are successful against corneal infection. A number of analogues were also prepared and tested against ATP dependent calcium uptake. Sulfone analogues were found to be modifier of calcium uptake and protein phosphorylation. Its derivate magnesium acetyl taurine is effective protector against NMDA induce retinal damage. Homotaurine is effective against high glucose neurotoxicity yet another derivate Taurolidine is effective in conjunctival flora. To have sufficient taurine it is good to use taurine containing functional food, nutraceuticals. It seems that taurine acts as pharmaconutrient for long life of eyes.

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