

## Ginkgo Biloba Extract Effect on Oxidative Stress Marker Malonildialdehyde, Redox Enzyme Gluthation Peroxidase, Visual Field Damage, and Retinal Nerve Fiber Layer Thickness in Primary Open Angle Glaucoma

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**Abstract:** Objective: To investigate ginkgo biloba extract effect on oxidative stress marker malonildialdehyde, redox enzyme gluthation peroxidase, visual field damage and retinal nerve fiber layer thickness in primary open angle glaucoma.

Methods : An experimental study, prospective, double blind was conducted at the Adam Malik Hospital from Agustus 2012 to Agustus 2013 after approved by the Ethics Committee for Health Research University of North Sumatera School of Medicine. Diagnosis of Primary Open Glaucoma was based on presence of an open iridocorneal angle, the characteristic appearance of glaucomatous optic neuropathy such as enlargement of optic cup ratio, focal thinning of neuroretinal rim, bayoneting and corresponding visual field defects and elevated intraocular pressure. Subjects underwent assessment visual field defects with Octopus 301, retinal nerve fiber layer thickness with Cirrus HD-OCT and venous blood was taken to measure plasma levels of oxidative stress marker malonildialdehyde (MDA) and redox enzyme gluthation peroxidase (GPx). Then subjects were divided into 2 groups. The first group was given 40 mg GBE 2 times daily and 20 patients POAG as a control given placebo (identical capsules filled with 40 mg fructose) for 6 months. We evaluated MDA and GPx, visual field for the change of progression rate using Mean Deviation (MD) and Pattern Standart Deviation (PSD), retinal nerve fiber layer thickness (RNFL) both of groups before and after treatment.

Results : After GBE treatment, a significant improvement in oxidative stress marker and redox enzyme indices at the sixth month was recorded: MDA level ( $p=0.001$ ) and GPx level ( $p=0,001$ ), visual fields MD ( $p=0,011$ ), PSD ( $p=0,020$ ), and retinal nerve fiber layer superior ( $p=0,001$ ), inferior ( $p =0,035$ ). No significant changes were found in intraocular pressure, retinal nerve fiber layer nasal, temporal, mean and optic nerve head after GBE extract or placebo.

Conclusion: GBE administration as a neuroprotective and antioxidant slowed of visual field and retinal nerve fiber layer damage in primary open angle glaucoma.

**Keywords :** malonyldialdehyde (MDA), gluthation peroxidase (GPx), ginkgo biloba, primary open angle glaucoma.