

Low-Concentration Atropine for Myopia Progression (LAMP) Study - 2019



Objective

To evaluate the efficacy and safety of low-concentration atropine eye drops at 0.05%, 0.025%, and 0.01%, compared with placebo, in children with myopia

Methods

Design: Double-blinded RCT

Sample Size: 438

Treatment Groups:

- 109 to 0.05% atropine
- 108 to 0.025% atropine
- 110 to 0.01% atropine
- 111 to placebo

Outcome Measures:

- Changes in spherical equivalent (SE) and axial length (AL)
- Changes in accommodation, pupil diameter, visual acuity, vision-related quality of life

Results

Point 1: A concentration-dependent response on myopia control was observed in all atropine concentrations

- At 1-year, SE change was -0.27 D, -0.46 D, -0.59 D, and -0.81 D in the 0.05%, 0.025%, 0.01% atropine, and placebo groups, respectively ($P < 0.001$)
- At 1-year, axial length change was larger in the placebo group (0.41 mm) than in the 0.05% (0.20 mm), 0.025% (0.29 mm), and 0.01% (0.36 mm) atropine groups ($P < 0.001$)
- During the third year, continued atropine treatment achieved a better effect across all concentrations compared with the washout regimen

Point 2: Changes in accommodation amplitude and pupil size followed a concentration-dependent response

- The accommodation amplitude was reduced by 1.98 D, 1.61 D, 0.26 D, and 0.32 D in the 0.05%, 0.025%, 0.01% atropine, and placebo groups, respectively ($P < 0.001$)
- Pupil sizes increased along a concentration-dependent response (between-group $P < 0.001$) for both photopic (daylight) and mesopic (twilight) conditions
- Visual acuity and vision-related quality of life were not affected significantly in all groups.

TLDR: Atropine reduced myopia progression when compared with placebo, with a concentration-dependent response.

Yam et al. Low-Concentration Atropine for Myopia Progression (LAMP) Study: A Randomized, Double-Blinded, Placebo-Controlled Trial of 0.05%, 0.025%, and 0.01% Atropine Eye Drops in Myopia Control. *Ophthalmology*. 2019 Jan;126(1):113-124

Yam JC et al. Three-Year Clinical Trial of Low-Concentration Atropine for Myopia Progression (LAMP) Study: Continued Versus Washout: Phase 3 Report. *Ophthalmology*. 2022 Mar;129(3):308-321.