



Not a Dry Eye in the House – Looking into Artificial Tears

CLINICAL QUESTION

How effective are artificial tears for dry eye syndrome?

BOTTOM LINE

While most products improve symptom scores, comparisons to placebo/no treatment are rare. Differences in patient outcomes between artificial tear products (including preservative versus preservative free) are rare, inconsistent, and likely unreliable. Product selection can be guided by costs and personal preference.

EVIDENCE

- Two systematic reviews with 43-64 randomized controlled trials (RCTs) reviewed individually for patient-oriented outcomes. Most excluded post-surgical and contact lens wearers.^{1,2}
 - Artificial tears versus “placebo”/no-treatment:
 - RCT (304 patients): Symptoms like dryness/soreness (scale 0-15, higher worse, baseline ~8).³
 - At 28 days: 5.7 sodium hyaluronate versus 6.1 saline drops, statistically but not clinically different.
 - RCT (27 computer-users, many without dry eyes) compared three different artificial tears to ‘no product’.⁴

- All interventions, including ‘no product,’ reduced patient symptoms, without difference between groups.
 - Artificial tears versus each other:
 - Validated patient symptom scale (0-100, higher worse, minimal clinically important difference=4.5): 18 RCTs; 27-445 patients with moderate-severe dry eyes. Of 36 different comparisons,^{1,2} three were statistically different:
 - Industry funded RCT (40 patients): At 90 days, cross-linked hyaluronic acid/coenzyme Q10 combination improved 16 points versus 8 points for hyaluronic acid alone.⁵
 - RCT (110 patients): At 30 days, final scores differed by 3 points (biased by differing baselines).⁶
 - RCT (120 patients): 12-week scores for sterile isotonic seawater washes were 4.5 points better than carmellose drops.⁷
 - Other patient-oriented symptom scores, 6 RCTs with ≥100 patients.^{3,8-12} One statistically different:
 - 135 patients, hypotonic 0.4% hyaluronic acid versus 0.3% hydroxypropylmethylcellulose. Example: Proportion attaining ‘mild or resolved’ burning or foreign body sensation at 60 days: 19%-36% more patients on hyaluronic acid.¹⁰
 - Preservative versus preservative-free artificial tears:
 - Systematic review (2 RCTs, 271 patients): No difference.¹³
- Limitations: High risk of funding bias,^{5,10} chance findings (many RCTs, differences rare), and some biased analyses.^{6,10}

CONTEXT

- Over-the-counter product costs vary (<\$10 to >\$50) with preservative-free typically being more expensive.¹⁴
- Guideline recommends preservative-free products if intolerant to preservative, soft/hybrid contact lens wearers, use of other eye topicals with preservative, or if drops required ≥4 times/day.¹⁵
- Non-topical interventions include warm compresses and lid hygiene.¹⁶

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