



Guideline topic: Pharmacological management of asthma
Evidence table 4.3f: Anti-cholinergic therapy for exercise-induced asthma

Author	Year	Study type	Quality rating	Population	Outcomes measured	Effect size	Confidence intervals / p values	Comments
Boulet	1989	Randomised, double-blind, placebo, cross-over. Single dosing with salbutamol 200ug. Ipratropium 80ug and cromoglycate 4mg.	++	11 adults with asthma, aged 19-49 years	Exercise and hyperosmolar induced bronchoconstriction % protection exercise:	Cromoglycate: 35% Ipratropium: 54% Salbutamol: 71%	Vs placebo: p< 0.05 p< 0.05 p< 0.05	Although all 3 drugs provided protection against EIA compared to placebo, there was no difference between drugs.
Bundgaard	1980	Randomised, double-blind, placebo, cross-over. Single dosing with neb. Cromoglycate 20mg, fenoterol 2mg, ipratropium 0.5mg and cromoglycate plus ipratropium.	+	18 adults with asthma, aged 17-40	Exercise-induced bronchoconstriction % fall in PEF:	Placebo 22% Ipratropium: 24% Cromoglycate: 20% Ipratropium cromoglycate: 13% Fenoterol: 2%	NS NS p< 0.05 p< 0.05	Ipratropim alone had no significant protection against EIA compared to placebo. There was some benefit when combined to cromoglycate.

Hartley	1980	Randomised, single-blind, placebo, cross-over	+	10 adults with asthma	Exercise-induced bronchoconstriction % fall in FEV1:	PLACEBO: 22% Ipratropium 0.1mg: 20% Ipratropium 1mg: 13%	NS p< 0.05	Only ipratropium 1mg provided partial protection against EIA.
Larsson	1982	Randomised, double-blind, placebo, cross-over. Single dosing with oxitropium 100ug, ipratropium 40ug, fenoterol 400ug.	++	8 adults with asthma	Exercise-induced bronchoconstriction Δ FEV1	Fenoterol completely prevented EIA; there was no difference between Ipratropium oxitropium and placebo (illustrated in Figure)		Small numbers. Ipratropium and oxitropium had no effect on EIA.
Sanguinetti	1986	Randomised, double-blind, placebo, cross-over. Single dosing with fenoterol 200ug, 400ug or 200ug plus ipratropium 80ug.	++	12 asthma patients, aged 7-41 years	Exercise-induced bronchoconstriction Post-exercise FEV1 (% of baseline):	Placebo: 73% Fenoterol 200ug: 80% Fenoterol 400ug: 84% Fen + ipratrop: 81%	NS p< 0.05 NS	Lack of effect with Duovent could be due to under-powered study.
Taytard	1987	Randomised, double-blind, placebo, cross-over. Single dosing with oxitropium 300ug	++	10 adults with asthma, aged 15-26 years	Exercise-induced bronchoconstriction T25 FEV1: T25 FEF 25-75:	p< 0.01 p< 0.01	Oxitropium 300ug prevented EIA compared to placebo.	
Wolkove	1981	Randomised,	++	8 adults	Exercise-induced	Placebo vs		Small

	double-blind, placebo, cross-over. Single dosing with ipratropium 40ug.		with asthma	bronchoconstriction Δ FEV1% Δ FEF %	ipratropium: Illustrated in Figure.	NS NS	numbers. Ipratropium 40ug had no significant protection against EIA
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