

## Preparations

### Proprietary Preparations (details are given in Part 3)

**Austral:** Spray-Tish; **Austria:** Rinorix; **Belg:** Rhinospray; **Cz:** Muconasal Plus; **Ger:** Bicion; Ellatun; Rhinospray; **Ital:** Rinogutt Spray-Fher; **Neth:** Bisolhasal; **Port:** Rhinospray; **Spain:** Rhinospray.

**Multi-ingredient:** **Arg:** Dexa-Rhinospray N; **Austral:** Spray-Tish Menthol; **Austria:** Rhinospray Plus; **Belg:** Dexa-Rhinospray; **Ger:** Dexa Bicion; Oxy Bicion; Rhinospray Plus; Rhinospray sensitiv; **Gr:** Dexa-Rhinospray-N; **Hung:** Rhinospray Plus; **Irl:** Dexa-Rhinospray Duo; **Ital:** Rinogutt Antiallergic Spray; Rinogutt Eucalipto-Fher; **Neth:** Rhinospray met menthol; **Rus:** Adrianol (Адрианол); **Spain:** Rhinospray Antiallergic; **UK:** Dexa-Rhinospray Duo†.

## Tuaminoheptane Sulfate (rINN) ⊗

Sulfato de tuaminoheptano; Tuaminoheptane, Sulfate de; Tuaminoheptane Sulphate (BANM); Tuaminoheptani Sulfas.

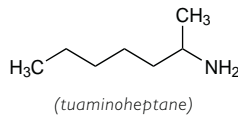
Туаминогептана Сульфат

(C<sub>7</sub>H<sub>17</sub>N)<sub>2</sub>·H<sub>2</sub>SO<sub>4</sub> = 328.5.

CAS — 6411-75-2.

ATC — R01AA11; R01AB08.

ATC Vet — QR01AA11; QR01AB08.



## Profile

Tuaminoheptane is a volatile sympathomimetic (p.1407) that has been used as the sulfate for the symptomatic relief of nasal congestion. Tuaminoheptane has also been used in the form of the carbonate.

## Preparations

### Proprietary Preparations (details are given in Part 3)

**Multi-ingredient:** **Braz:** Rinofluimucil; **Fr:** Rhinofluimucil; **Ger:** Rinofluimucil-S†; **Hong Kong:** Rinofluimucil; **Hung:** Rinofluimucil; **Ital:** Rinofluimucil; **Port:** Rinofluimucil; **Rus:** Rinofluimucil (Ринофлуимуцил); **Spain:** Rinofluimucil; **Switz:** Rinofluimucil; **Thai:** Rinofluimucil.

## Tymazoline Hydrochloride (BANM) ⊗

2-Thymoxymethyl-2-imidazoline Hydrochloride; Timazolina, hidrocloruro de; Tymazolini Hydrochloridum; Tymazoliny chlorowodorek. 2-(2-Isopropyl-5-methylphenoxymethyl)-2-imidazoline hydrochloride.

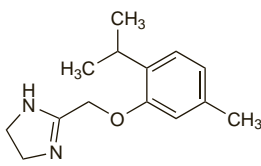
Тимазолина Гидрохлорид

C<sub>14</sub>H<sub>20</sub>N<sub>2</sub>O·HCl = 268.8.

CAS — 24243-97-8 (tymazoline); 28120-03-8 (tymazoline hydrochloride).

ATC — R01AA13.

ATC Vet — QR01AA13.



## Pharmacopoeias. In *Pol*.

## Profile

Tymazoline is a sympathomimetic that has been used as the hydrochloride similarly to naphazoline (p.1565) for its local vasoconstrictor effect in the symptomatic relief of nasal congestion (p.1548).

## Preparations

### Proprietary Preparations (details are given in Part 3)

**Pol:** Thymazen; **Thai:** Pernazene.

## Xylometazoline Hydrochloride

(BANM, rINN) ⊗

Hidrocloruro de xilometazolina; Xilometazolin Hidroklorür; Xilometazolino hidrocloridas; Xylometatzolinhydrochlorid; Xylometazolin chlorowodorek; Xilometazolinhydrochlorid; Xylometazoline, chlorhydrate de; Xylometazolinhydro; Xylometazolin-hydrochlorid; Xylometazolini hydrochloridum. 2-(4-tert-Butyl-2,6-dimethylbenzyl)-2-imidazoline hydrochloride.

Силометазолина Гидрохлорид

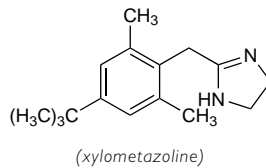
C<sub>16</sub>H<sub>24</sub>N<sub>2</sub>·HCl = 280.8.

The symbol † denotes a preparation no longer actively marketed

CAS — 526-36-3 (xylometazoline); 1218-35-5 (xylometazoline hydrochloride).

ATC — R01AA07; R01AB06; S01GA03.

ATC Vet — QR01AA07; QR01AB06; QS01GA03.



## Pharmacopoeias. In *Eur*. (see p.vii) and *US*.

**Ph. Eur. 6.2** (Xylometazoline Hydrochloride). A white or almost white, crystalline powder. Freely soluble in water, in alcohol, and in methyl alcohol. Protect from light.

**USP 31** (Xylometazoline Hydrochloride). A white to off-white, odourless, crystalline powder. Soluble 1 in 35 of water; freely soluble in alcohol; sparingly soluble in chloroform; practically insoluble in ether and in benzene. pH of a 5% solution in water is between 5.0 and 6.6. Store in airtight containers. Protect from light.

## Adverse Effects and Precautions

As for Naphazoline, p.1565.

## Interactions

Since xylometazoline is absorbed through the mucosa interactions may follow topical application. The *BNF* considers that all sympathomimetic nasal decongestants may cause a hypertensive crisis if used during treatment with an MAOI. For the interactions of sympathomimetics in general, see p.1407.

## Uses and Administration

Xylometazoline is a direct-acting sympathomimetic (p.1408) with marked alpha-adrenergic activity. It is a vasoconstrictor which reduces swelling and congestion when applied to mucous membranes. The effect begins within 5 to 10 minutes of application and lasts for up to 10 hours.

Xylometazoline is used as the hydrochloride for the short-term symptomatic relief of nasal congestion (p.1548). A 0.1% solution of xylometazoline hydrochloride is applied topically as nasal drops or a spray into each nostril two or three times daily. For children's doses, see Administration in Children, below.

Xylometazoline hydrochloride solution is instilled into the eye as a conjunctival decongestant (see Conjunctivitis, p.564). Preparations containing 0.05% xylometazoline hydrochloride with 0.5% antazoline sulfate are typical; 0.1% xylometazoline hydrochloride has also been used.

**Administration in children.** Over-the-counter cough and cold preparations containing sympathomimetic decongestants (including xylometazoline) should be used with caution in children and generally avoided in those under 2 years of age (see p.1547). However, the *BNFC* suggests that, in certain circumstances, specialists may prescribe xylometazoline nasal drops for children under 2 years in the short-term treatment of severe nasal congestion which has not responded to sodium chloride nasal drops or inhalation of warm moist air. A 0.05% solution of xylometazoline hydrochloride is licensed for use in children aged from 2 to 12 years; 1 or 2 drops are instilled into each nostril once or twice daily, for a maximum of 7 days. The *BNFC* suggests that younger children aged 3 months and over may be given similar doses.

## Preparations

**BP 2008:** Xylometazoline Nasal Drops;

**USP 31:** Xylometazoline Hydrochloride Nasal Solution.

### Proprietary Preparations (details are given in Part 3)

**Arg:** Nastizol; Otrivina; **Austral:** Austrial; **Austria:** Olynth; Otrivin; Ratio-Soft; Xylo-COMOD; **Belg:** Nasa Rhinathiol; Nasasinitub; Nuso-San; Otrivine Anti-Rhinitis; Rhinidine†; **Braz:** Oraxyl†; Otrivina; **Canad:** Balminal Nasal Decongestant; Certified Decongestant; Decongest†; Decongestant Nasal Spray; Decongestant Nose Drops; Nasal Decongestant; Otrivin; **Cz:** Dr Rentschler Snupfenspray†; Dr Rentschler Snupfentropfen†; Mar Rhino; Nasenspray AL; Nasentropfen AL; Olynth; Otrivin; Rhino-Stas; Xylo-COMOD; **Denm:** Otrivin; Passagen; Zymelin; **Fin:** Naso-Ratiopharm; Nasolin; Otrivin; Zymelin†; **Ger:** Balkis; Gelonasa; Imidin K†; Imidin N; Mentopin Nasenspray†; Nasan; Nasengel; Nasengel AL; Nasenspray; Nasenspray AL; Nasenspray E; Nasenspray K; Nasenspray-CT; Nasentropfen AL; Nasentropfen E; Nasentropfen K; Nasentropfen Stada; Olynth; Otrivin; Otrivin gegen Schnupfen; Rapako xylo; Rhinex mit Xylometazolin; schnupfen endrine;

Siozwo Akut†; Snup; stas Nasentropfen; Nasenspray†; Tussamag Nasenspray; Xylo; Xylo Siozwo†; Xylo-COMOD†; Xylo-POS; **Gr:** Otrivin; Otrivin-Menthol; **Hong Kong:** Decongestant Nasal Spray; Otrivin; Xyloma; **Hung:** Nasan; Novonin; Otrivin; Rhinathiol; Rhino-Stas; **India:** Decon; Nazalin; Otrivin; **Indon:** Otrivin; **Irl:** Otrivine; **Israel:** Nazalet; Otrivin; Xylovit; **Ital:** Neo Rinoleina; Otrivin; Respiro; **Malaysia:** Otrivin; **Neth:** Kruidvat; Neusdruppels; Kruidvat; Neusspray; Mucorhiny†; Otrivin; Xylo-COMOD; **Norw:** Naso; Nazaren; Otrivin; Xolin; Zymelin; **NZ:** Otrivine; **Philipp:** Otrivin; **Pol:** Otrivin; Xylojet; Xylin; **Port:** Otrivina; **Rus:** Dlianos (Длянос); Grippostat Rhino (Гриппостад Рино); Halazolol (Галазолол); Olynth (Олинт); Otrivin (Отривин); Rhinonorm (Ринонорм); Rhinostop (Риностоп); Suprima-Nos (Суприма-Ноз); Tuzine Xylo (Тизин Ксило); Xymelin (Ксимелин); **S.Afr:** Otrivin; **Singapore:** Otrivin; **Spain:** Amidrin; Idasal; Otrivin; Rinoblanco; **Swed:** Nasoferm; Otrivin; Zymelin; **Switz:** Nasben; Nasobol Xylo; Olynth; Otrivin; Rhinostop; Rhumef; Rhosedin; Xylo-Mepha; **Thai:** Otrivin; **Turk:** Naze; Otrivine; Rinizol; Xylo-COMOD; **UAE:** Xylolin; **UK:** Non-Drowsy Sudafed Decongestant Nasal Spray; Otradrops; Otrasyr; Otrivine; Tixycolds Cold and Allergy; **USA:** 4-Way Moisturizing Relief; Otrivin.

**Multi-ingredient:** **Chile:** Bacitopic Compuesto; Nasomin; Rinobanefid; **Denm:** Otrivin Menthol; **Fin:** Otrivin Menthol; **Ger:** Lomupren composition†; Nasic; **Irl:** Otrivine-Antistin; **Israel:** Aforinol; **Ital:** Inalar; **Malaysia:** Rynacrom Compound†; **Mex:** Rinadex Compound†; **Neth:** Otrivin Menthol; **NZ:** Otrivine Menthol; Otrivine-Antistin; **Swed:** Otrivin Menthol; **Switz:** Lomusol-X†; Mucio-Trin†; Tiofan; **Thai:** Rynacrom Compound†; **Turk:** Rynacrom Compound; **UK:** Otrivine-Antistin; Rynacrom Compound†.

## Zipeprol Hydrochloride (rINN)

CERM-3024; Hidrocloruro de zipeprol; Zipeprol, Chlorhydrate de; Zipeproli Hydrochloridum. α-(α-Methoxybenzyl)-4-(β-methoxyphenethyl)-1-piperazineethanol dihydrochloride.

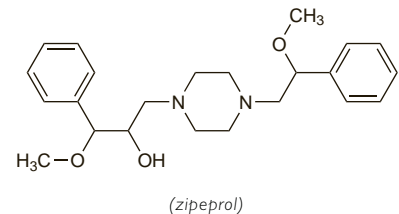
Зипепрола Гидрохлорид

C<sub>23</sub>H<sub>32</sub>N<sub>2</sub>O<sub>3</sub>·2HCl = 457.4.

CAS — 34758-83-3 (zipeprol); 34758-84-4 (zipeprol hydrochloride).

ATC — R05DB15.

ATC Vet — QR05DB15.



## Profile

Zipeprol is a centrally acting cough suppressant that is stated to have a peripheral action on bronchial spasm. It has been given as the hydrochloride, typically in an oral dose of 150 to 300 mg daily in divided doses. There have been reports of abuse and overdose producing neurological symptoms.

**Abuse and overdose.** Severe neurological symptoms have been reported in young adults after habitual abuse of zipeprol for euphoria. Patients have presented with generalised seizures, followed by coma.<sup>1</sup> One patient who ingested 750 mg of zipeprol [over twice the maximum daily dose] had several opisthotonic crises and developed cerebral oedema.<sup>2</sup> Symptoms of overdose in children have included restlessness, somnolence, ataxia, choreic movements, forced deviation of the head and eyes, generalised seizures, respiratory depression, and coma.<sup>1,3</sup> Fatalities have been reported.

Dependence and withdrawal symptoms similar to those produced by opioids have been reported.<sup>4</sup> WHO has assessed zipeprol to have a moderate potential for dependence and liability for abuse.<sup>5</sup> Although zipeprol is a weak opioid agonist at high doses its toxicity and hallucinogenic and other psychotropic effects constitute a significant element in its abuse, and the public health and social problems associated with such abuse were considered substantial.

- Moroni C, *et al*. Overdosage of zipeprol, a non-opioid antitussive agent. *Lancet* 1984; **i**: 45.
- Perraro F, Beorchia A. Convulsions and cerebral oedema associated with zipeprol abuse. *Lancet* 1984; **i**: 45-6.
- Merigot P, *et al*. Les convulsions avec trois antitussifs dérivés substitués de la pipérazine (zipeprol, éprazinone, éprozinol). *Ann Pediatr (Paris)* 1985; **32**: 504-11.
- Mallaret MP, *et al*. Zipeprol: primary dependence in an unaddicted patient. *Ann Pharmacother* 1995; **29**: 540.
- WHO. WHO expert committee on drug dependence: twentieth report. *WHO Tech Rep Ser* 856 1995. Also available at: [http://whqlibdoc.who.int/trs/WHO\\_TRS\\_856.pdf](http://whqlibdoc.who.int/trs/WHO_TRS_856.pdf) (accessed 11/05/07)

## Preparations

### Proprietary Preparations (details are given in Part 3)

**Chile:** Frenotos; **Gr:** Dovaxin†; Duo-Extolent†; Jactuss†; **Mex:** Resplene†; Tusigen; **Venez:** Coloplex†.

The symbol ⊗ denotes a substance whose use may be restricted in certain sports (see p.vii)