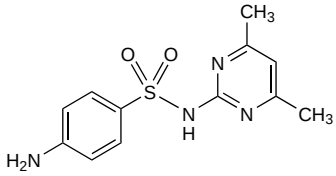
Sulfadimidine *(BAN, rINN)*

Solfametazina; Sulfadimerazine; Sulfadimezinum; Sulfadimidiini; Sulfadimidin; Sulfadimidina; Sulfadimidinas; Sulfadimidinum; Sulfamethazine; Sulphadimethylpyrimidine; Sulphadimidine; Sulphamethazine; Szulfadimidin. N^1-(4,6-Dimethylpyrimidin-2-yl)sulphanilamide.

Сульфадимидин

$C_{12}H_{14}N_4O_2S$ = 278.3.
CAS — 57-68-1.
ATC — J01EB03.
ATC Vet — QJ01EQ03; QP51AG01.



NOTE. Sulfadimethylpyrimidine has been used as a synonym for sulfisomidine (p.344). Care should be taken to avoid confusion between the two compounds, which are isomeric.

Pharmacopoeias. In *Eur.* (see p.vii), *Int.*, *US*, and *Viet.* Also in *BP (Vet)*.

Ph. Eur. 6.2 (Sulfadimidine). White or almost white powder or crystals. Very slightly soluble in water; slightly soluble in alcohol; soluble in acetone. It dissolves in solutions of alkali hydroxides and in dilute mineral acids. Protect from light.

USP 31 (Sulfamethazine). White to yellowish-white, practically odourless, powder. It may darken on exposure to light. Very slightly soluble in water and in ether; slightly soluble in alcohol; soluble in acetone. Protect from light.

Sulfadimidine Sodium *(BANM, rINNM)*

Natrii Sulfadimidinum; Soluble Sulphadimidine; Sulfadimidina sódica; Sulfadimidine Sodique; Sulfamethazine Sodium; Sulphadimidine Sodium.

Натрий Сульфадимидин

$C_{12}H_{13}N_4NaO_2S$ = 300.3.
CAS — 1981-58-4.
ATC — J01EB03.

Pharmacopoeias. In *Int.*

Profile

Sulfadimidine is a short-acting sulfonamide with properties similar to those of sulfamethoxazole (p.340).

It is well absorbed from the gastrointestinal tract and is about 80 to 90% bound to plasma proteins. Reported half-lives have ranged from 1.5 to 4 hours in fast and 5.5 to 8.8 hours in slow acetylators. Because of the relatively high solubility of the drug and its acetyl metabolite, crystalluria may be less likely than with sulfamethoxazole.

In the treatment of susceptible infections, sulfadimidine has been given orally in an initial dose of 2 g, followed by 0.5 to 1.0 g every 6 to 8 hours. It has also been given parenterally as the sodium salt.

Sulfadimidine has also been used with other sulfonamides, particularly sulfamerazine and sulfadiazine. It is also used in veterinary medicine, sometimes with baquiloprim or trimethoprim.

Because its pharmacokinetics differ in fast and slow acetylators, sulfadimidine has been used to determine acetylator status.

Preparations

USP 31: Trisulfapyrimidines Oral Suspension; Trisulfapyrimidines Tablets.

Proprietary Preparations (details are given in Part 3)
Hung.: Septosyl.

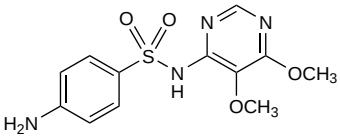
Multi-ingredient: ***Hung.:*** Potesept†; ***Indon.:*** Trisulfa; ***Thai.:*** Sulfatril.

Sulfadoxine *(BAN, USAN, rINN)*

Ro-4-4393; Sulfadoksiini; Sulfadoksinas; Sulfadoxin; Sulfadoxina; Sulfadoxinum; Sulformethoxine; Sulforthomidine; Sulphormethoxine; Sulphorthodimethoxine; Szulfadoxin. N^1-(5,6-Dimethoxypyrimidin-4-yl)sulphanilamide.

Сульфадоксин

$C_{12}H_{14}N_4O_4S$ = 310.3.
CAS — 2447-57-6.
ATC Vet — QJ01EQ13.



Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), *Int.*, *US*, and *Viet.*

Ph. Eur. 6.2 (Sulfadoxine). White or yellowish-white crystalline powder or crystals. Very slightly soluble in water; slightly soluble in alcohol and in methyl alcohol. It dissolves in solutions of alkali hydroxides and in dilute mineral acids. Protect from light.

USP 31 (Sulfadoxine). Protect from light.

Adverse Effects, Treatment, and Precautions

As for Sulfamethoxazole, p.340. For reference to the adverse effects of a combination of sulfadoxine and pyrimethamine, see Pyrimethamine, p.610.

If adverse effects occur, sulfadoxine has the disadvantage that several days are required for elimination from the body.

Interactions

As for Sulfamethoxazole, p.341.

Antimicrobial Action

As for Sulfamethoxazole, p.341. Synergy exists between sulfadoxine and pyrimethamine, which act against folate metabolism at different points of the metabolic cycle.

Resistance to the combination of sulfadoxine and pyrimethamine in plasmodia, first noted in Thailand in the late 1970s, has become widespread in many malarious areas of the world. For further details of resistance to antimalarial drugs, see p.594.

Pharmacokinetics

Sulfadoxine is readily absorbed from the gastrointestinal tract. High concentrations in the blood are reached in about 4 hours; the half-life in the blood is about 4 to 9 days. About 90 to 95% is reported to be bound to plasma proteins.

Sulfadoxine is widely distributed to body tissues and fluids; it passes into the fetal circulation and has been detected in low concentrations in breast milk. Sulfadoxine is excreted very slowly in urine, primarily unchanged.

Uses and Administration

Sulfadoxine is a long-acting sulfonamide that has been used in the treatment of various infections but is now rarely used alone.

It is given as a fixed-dose combination of 20 parts sulfadoxine with 1 part pyrimethamine (*Fansidar*, *Roche*) in the treatment of falciparum malaria resistant to other therapies (p.594), usually after a course of quinine. Although the combination has been used in the prophylaxis of malaria, the risk of toxicity is now generally considered to outweigh its value.

In the treatment of malaria, the usual oral dose is 1.5 g of sulfadoxine with 75 mg of pyrimethamine as a single dose; this should not be repeated for at least 7 days. Oral doses for children are: 5 to 10 kg bodyweight, 250 mg sulfadoxine with 12.5 mg pyrimethamine; 11 to 20 kg, 500 mg sulfadoxine with 25 mg pyrimethamine; 21 to 30 kg, 750 mg sulfadoxine with 37.5 mg pyrimethamine; 31 to 45 kg, 1 g sulfadoxine with 50 mg pyrimethamine.

Sulfadoxine with pyrimethamine has also been given intramuscularly.

Sulfadoxine with pyrimethamine has also been tried in the treatment of actinomycetomas (see Mycetoma p.180), and for prophylaxis of pneumocystis pneumonia in immunocompromised patients (see p.521 for the more usual prophylactic regimens).

A mixture of 5 parts of sulfadoxine with 1 part trimethoprim is used in veterinary medicine.

Preparations

USP 31: Sulfadoxine and Pyrimethamine Tablets.

Proprietary Preparations (details are given in Part 3)
Malaysia: Fansidar.

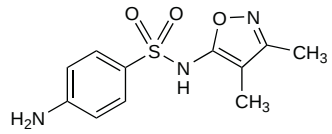
Multi-ingredient: ***Austral.:*** Fansidar; ***Belg.:*** Malastop†; ***Braz.:*** Fansidar; ***Canad.:*** Fansidar†; ***Denm.:*** Fansidar†; ***Fr.:*** Fansidar; ***India:*** Artemal†; Laridox; Pyralfin; Rimodar; ***Indon.:*** Fansidar; Suldox; ***Irl.:*** Fansidar; ***Israel:*** Fansidar; ***Malaysia:*** Madomine; ***Philipp.:*** Fansidar; ***S.Afr.:*** Fansidar; ***Singapore:*** Madomine†; ***Switz.:*** Fansidar; Fansimef†; ***Thai.:*** Vivaxine†; ***UK:*** Fansidar; ***USA:*** Fansidar.

Sulfafurazole *(BAN, pINN)*

Sulfafuratsoli; Sulfafurazol; Sulfafurazolas; Sulfafurazolum; Sulfisoxazole; Sülfizoksazol; Sulphafuraz; Sulphafurazole; Szulfafurazol. N^1-(3,4-Dimethylisoxazol-5-yl)sulphanilamide.

Сульфафуразол

$C_{11}H_{13}N_3O_3S$ = 267.3.
CAS — 127-69-5.
ATC — J01EB05; S01AB02.
ATC Vet — QJ01EQ05; QS01AB02.



Pharmacopoeias. In *Chin.*, *Eur.* (see p.vii), *Jpn*, and *US.*

Ph. Eur. 6.2 (Sulfafurazole). White or yellowish-white, crystalline powder or crystals. Practically insoluble in water; sparingly soluble in alcohol; slightly soluble in dichloromethane. It dissolves in solutions of alkali hydroxides and in dilute mineral acids. Protect from light.

USP 31 (Sulfisoxazole). A white to slightly yellowish, odourless crystalline powder. Soluble 1 in 7700 of water and 1 in 10 of boiling alcohol; soluble in 3N hydrochloric acid. Store in airtight containers. Protect from light.

Acetyl Sulfafurazole

Acetilsulfafurazol; Acetyl Sulphafurazole; Sulfisoxazole Acetyl. N^1-Acetyl Sulphafurazole; *N*-(3,4-Dimethylisoxazol-5-yl)-*N*-sulphanilylacetamide.

$C_{13}H_{15}N_3O_4S$ = 309.3.
CAS — 80-74-0.
ATC — J01EB05; S01AB02.
ATC Vet — QS01AB02.

NOTE. Acetyl sulfafurazole is to be distinguished from the N^4-acetyl derivative formed from sulfafurazole by conjugation in the body.

Compounded preparations of acetyl sulfafurazole may be represented by the following name:

- Co-erynsulfisox (*PEN*)—acetyl sulfafurazole and erythromycin ethyl succinate.

Pharmacopoeias. In *US.*

USP 31 (Sulfisoxazole Acetyl). A white or slightly yellow crystalline powder. Practically insoluble in water; soluble 1 in 176 of alcohol, 1 in 35 of chloroform, 1 in 1064 of ether, and 1 in 203 of methyl alcohol. Store in airtight containers. Protect from light.

Sulfafurazole Diolamine *(pINNM)*

NU-445; Sulfafurazol diolamina; Sulfafurazol, Diolamine de; Sulfafurazoli Dioliaminum; Sülfisoksazol Dietanolamin; Sulfisoxazole Diolamine *(USAN)*; Sulphafurazole Diethanolamine; Sulphafurazole Diolamine. The 2,2′-iminobisethanol salt of sulphafurazole.

Сульфафуразола Диоламин

$C_{11}H_{13}N_3O_3S,C_4H_{11}NO_2$ = 372.4.
CAS — 4299-60-9.
ATC — J01EB05; S01AB02.
ATC Vet — QS01AB02.

Adverse Effects, Treatment, and Precautions

As for Sulfamethoxazole, p.340.

Sulfafurazole and its acetyl derivative are relatively soluble in urine and the risk of crystalluria is generally slight, but nevertheless adequate fluid intake is recommended.

Breast feeding. A study[1] in 6 women who received sulfafurazole concluded that the amount of drug secreted into breast milk poses no risk to the healthy infant beyond the immediate newborn period, but potential risk in breast-fed infants with jaundice or G6PD deficiency, or who are ill, stressed, or premature, was more difficult to evaluate. Based on this evidence, the American Academy of Pediatrics[2] has stated that sulfafurazole is usually

compatible with breast feeding, but caution is required in the infants mentioned above.

1. Kauffman RE, *et al.* Sulfisoxazole secretion into human milk. *J Pediatr* 1980; **97:** 839–41.
2. American Academy of Pediatrics. The transfer of drugs and other chemicals into human milk. *Pediatrics* 2001; **108:** 776–89. Correction. *ibid.*; 1029. Also available at: http://aappolicy.aappublications.org/cgi/content/full/pediatrics%3b108/3/776 (accessed 28/05/04)

Interactions
As for Sulfamethoxazole, p.341.

Sulfafurazole has been reported to increase the anaesthetic effect of thiopental.

Eye preparations of sulfafurazole diolamine should not be applied with preparations of silver salts.

Antimicrobial Action
As for Sulfamethoxazole, p.341.

Pharmacokinetics
Sulfafurazole is readily absorbed from the gastrointestinal tract with peak plasma concentrations occurring 1 to 4 hours after an oral dose. Acetyl sulfafurazole (the N^1-acetyl derivative) is broken down to sulfafurazole in the gastrointestinal tract before absorption, resulting in delayed and somewhat lower peak concentrations. After absorption about 85 to 90% is bound to plasma proteins. Sulfafurazole readily diffuses into extracellular fluid, but very little diffuses into cells. Concentrations in the CSF are about one-third of those in the blood. It crosses the placenta into the fetal circulation and is distributed into breast milk. About 30% of sulfafurazole in the blood and in the urine is in the form of the N^4-acetyl derivative.

Sulfafurazole is excreted rapidly in the urine, up to 97% of a single dose being eliminated in 48 hours. The half-life is reported to range from about 5 to 8 hours. Both sulfafurazole and its N^4-acetyl derivative are more soluble than many other sulfonamides in urine.

Uses and Administration
Sulfafurazole is a short-acting sulfonamide that is used similarly to sulfamethoxazole (p.341), notably in the treatment of urinary-tract infections, pneumonia due to *Chlamydophila pneumoniae* (*Chlamydia pneumoniae*), nocardiosis, and trachoma. It is also used, usually with erythromycin, in the treatment of otitis media. For details of these infections and their treatment see Choice of Antibacterial, p.162.

Sulfafurazole is usually given orally. In the treatment of susceptible infections, it has been given in an initial dose of 2 to 4 g, followed by 4 to 8 g daily in divided doses every 4 to 6 hours. For children and infants over 2 months of age, the dose has been 75 mg/kg initially, followed by 150 mg/kg daily in divided doses to a maximum of 6 g daily. Dosage modification may be necessary in patients with renal impairment. Acetyl sulfafurazole is tasteless and is used in liquid oral preparations of the drug; doses are expressed in terms of sulfafurazole. 1.16 g of acetyl sulfafurazole is equivalent to about 1 g of sulfafurazole.

Sulfafurazole diolamine has been used, as an ophthalmic ointment or solution containing the equivalent of 4% of sulfafurazole, in the topical treatment of susceptible eye infections. Sulfafurazole diolamine 1.39 g is equivalent to about 1 g of sulfafurazole.

Sulfafurazole diolamine has also been given parenterally.

Preparations
USP 31: Erythromycin Estolate and Sulfisoxazole Acetyl Oral Suspension; Erythromycin Ethylsuccinate and Sulfisoxazole Acetyl for Oral Suspension; Sulfisoxazole Acetyl Oral Suspension; Sulfisoxazole Tablets.

Proprietary Preparations (details are given in Part 3)
Turk.: Gansol; ***USA:*** Gantrisin†; ***Venez.:*** Ganticol; Soxacol†.

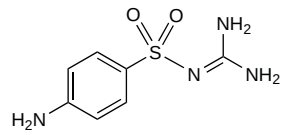
Multi-ingredient: ***Arg.:*** Pediazole†; ***Canad.:*** Pediazole; ***Chile:*** Bioquin; Pediazole†; ***Fr.:*** Pediazole; ***Gr.:*** Pediazole; ***Hong Kong:*** Pediazole†; ***Israel:*** Pediazole; ***Mex.:*** Pediazole; Urovec; ***Turk.:*** Azo Gantrisin; ***USA:*** Eryzole†; Pediazole; ***Venez.:*** Pediazole†.

Sulfaguanidine *(BAN, rINN)*

Solfaguanidina; Sulfaguanidiini; Sulfaguanidin; Sulfaguanidina; Sulfaguanidinas; Sulfaguanidinum; Sulfaguanidyna; Sulfamidinum; Sulginum; Sulphaguanidine; Szulfaguanidin. 1-Sulphanilylguanidine; *N*′-Amidinosulphanilamide.

Сульфагуанидин

$C_7H_{10}N_4O_2S$ = 214.2.
CAS — 57-67-0 (anhydrous sulfaguanidine); 6190-55-2 (sulfaguanidine monohydrate).
ATC — A07AB03.
ATC Vet — QA07AB03.



Pharmacopoeias. In *Eur.* (see p.vii).
Viet. includes the monohydrate.
Ph. Eur. 6.2 (Sulfaguanidine). A white or almost white, fine crystalline powder. Very slightly soluble in water and in alcohol; slightly soluble in acetone; practically insoluble in dichloromethane. It dissolves in dilute solutions of mineral acids. Protect from light.

Profile
Sulfaguanidine is a sulfonamide with properties similar to those of sulfamethoxazole (p.340). It is absorbed to a limited extent from the gastrointestinal tract and may therefore be more likely to cause systemic effects than less well absorbed drugs such as phthalylsulfathiazole and succinylsulfathiazole. It is used, usually with other drugs, in the treatment of gastrointestinal infections, and has also been applied locally to the skin and throat.

Preparations
Proprietary Preparations (details are given in Part 3)
Fr.: Enteropathyl.

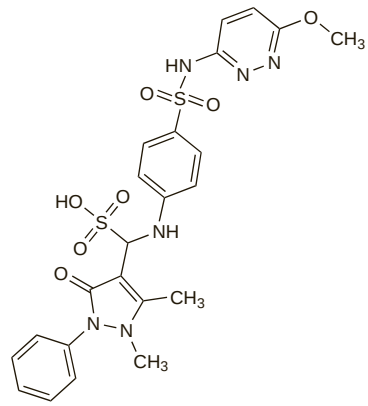
Multi-ingredient: ***Braz.:*** Sanadiar†; ***Chile:*** Carbon Sulfaguanidina; ***Mex.:*** Neopecsul; ***Thai.:*** Biodan†.

Sulfamazone Sodium *(rINNM)*

Natrii Sulfamazonum; Sulfamazona sódica; Sulfamazone Sodique; Sulfenazone; Sulphenazone. Sodium α-{*p*-[(6-methoxy-3-pyridazinyl)sulfamoyl]anilino}-2,3-dimethyl-5-oxo-1-phenyl-3-pyrazoline-4-methanesulphonate.

Натрий Сульфамазон

$C_{23}H_{24}N_6O_7S_2Na$ = 583.6.
CAS — 65761-24-2 (sulfamazone); 13061-27-3 (sulfamazone sodium).
ATC — J01ED09.



(sulfamazone)

Profile
Sulfamazone is an antibacterial with antipyretic activity that has been given as the sodium salt, orally or rectally, in infections of the upper respiratory tract.

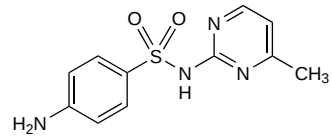
Preparations
Proprietary Preparations (details are given in Part 3)
Ital.: Marespin†.

Sulfamerazine *(BAN, rINN)*

RP-2632; Solfamerazina; Sulfamerasinum; Sulfameratsiini; Sulfamerazin; Sulfamerazina; Sulfamerazinas; Sulfamérazine; Sulfamerazinum; Sulfamethyldiazine; Sulfamethylpyrimidine; Sulphamerazine; Szulfamerazin. N^1-(4-Methylpyrimidin-2-yl)sulphanilamide.

Сульфамеразин

$C_{11}H_{12}N_4O_2S$ = 264.3.
CAS — 127-79-7.
ATC — D06BA06; J01ED07.
ATC Vet — QD06BA06.



Pharmacopoeias. In *Eur.* (see p.vii). Also in *BP(Vet)*.
Ph. Eur. 6.2 (Sulfamerazine). White, yellowish-white, or pinkish-white, crystalline powder or crystals. Very slightly soluble in water and in dichloromethane; slightly soluble in alcohol; sparingly soluble in acetone. It dissolves in solutions of alkali hydroxides and in dilute mineral acids. Protect from light.

Sulfamerazine Sodium *(BANM, rINN)*

Soluble Sulphamerazine; Sulfamerazina de sodio; Sulfamerazina sódica; Sulfamérazine sodique; Sulfamerazinum Natricum; Sulphamerazine Sodium.

Сульфамеразин Натрий

$C_{11}H_{11}N_4NaO_2S$ = 286.3.
CAS — 127-58-2.
ATC — D06BA06; J01ED07.
ATC Vet — QD06BA06.

Profile
Sulfamerazine is a short-acting sulfonamide with properties similar to those of sulfamethoxazole (p.340). It has usually been given with other sulfonamides, or with trimethoprim.

Preparations
USP 31: Trisulfapyrimidines Oral Suspension; Trisulfapyrimidines Tablets.

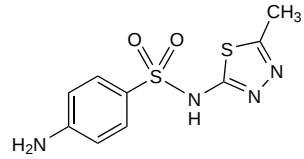
Proprietary Preparations (details are given in Part 3)
Multi-ingredient: ***Ger.:*** Berlocombin†; ***Indon.:*** Trisulfa; ***Thai.:*** Sulfatril.

Sulfamethizole *(BAN, rINN)*

Sulfaméthizol; Sulfamethizol; Sulfamethizolum; Sulfametitsoli; Sulfametizol; Sulfametizolas; Sulphamethizole; Szulfametizol. N^1-(5-Methyl-1,3,4-thiadiazol-2-yl)sulphanilamide.

Сульфаметизол

$C_9H_{10}N_4O_2S_2$ = 270.3.
CAS — 144-82-1.
ATC — B05CA04; D06BA04; J01EB02; S01AB01.
ATC Vet — QB05CA04; QD06BA04; QJ01EQ02; QS01AB01.



Pharmacopoeias. In *Eur.* (see p.vii), *Jpn*, and *US*.
Ph. Eur. 6.2 (Sulfamethizole). White or yellowish-white crystalline powder or crystals. Very slightly soluble in water; sparingly soluble in alcohol; soluble in acetone. It dissolves in dilute solutions of alkali hydroxides and in dilute mineral acids. Protect from light.
USP 31 (Sulfamethizole). Practically odourless, white crystals or powder. Soluble 1 in 2000 of water, 1 in 38 of alcohol, 1 in 13 of acetone, and 1 in 1900 of chloroform and of ether; freely soluble in solutions of ammonium, potassium, and sodium hydroxides; soluble in dilute mineral acids; practically insoluble in benzene. Protect from light.

Adverse Effects, Treatment, and Precautions
As for Sulfamethoxazole, p.340.

Sulfamethizole and its acetyl derivative are relatively soluble in urine, and the risk of crystalluria is quite low, but an adequate fluid intake should generally be maintained.