

PRODUCT MONOGRAPH
INCLUDING PATIENT MEDICATION INFORMATION

Pr **SALOFALK**[®]

Mesalamine delayed release tablets

Delayed release tablets, 500 mg, Oral

Lower Gastrointestinal Tract Anti-Inflammatory

(ATC A07EC02)

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RECENT MAJOR LABEL CHANGES

7 WARNINGS AND PRECAUTIONS, Renal	06/2023
7 WARNINGS AND PRECAUTIONS, Skin	06/2023
7 WARNINGS AND PRECAUTIONS, 7.1.2 Breast Feeding	11/2021

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PART I: HEALTH PROFESSIONAL INFORMATION

1 INDICATIONS

SALOFALK® (mesalamine delayed release tablets) is indicated in adult patients for:

- treatment of acute ulcerative colitis
- prevention of relapse of Crohn's disease in patients following bowel resection

1.1 Pediatrics

No data are available to Health Canada; therefore, Health Canada has not authorized an indication for pediatric use.

1.2 Geriatrics

No data are available to Health Canada; therefore, Health Canada has not authorized an indication for geriatric use.

2 CONTRAINDICATIONS

SALOFALK is contraindicated in:

- patients who are hypersensitive to this drug or to any ingredient in the formulation, including any non-medicinal ingredient, or component of the container. For a complete listing, see 6 DOSAGE FORMS, STRENGTHS, COMPOSITION AND PACKAGING.
- patients with severe renal impairment (GFR<30ml/min/1.73m²) and/or severe hepatic impairment. See 7 WARNINGS AND PRECAUTIONS.
- cases of existing gastric or duodenal ulcer.
- patients with urinary tract obstructions.
- patients unable to swallow the intact tablets.
- patients who are hypersensitive to salicylates including acetylsalicylic acid (e.g. Aspirin®), may also be hypersensitive to this medication.

4 DOSAGE AND ADMINISTRATION

4.1 Dosing Considerations

- In the acute ulcerative colitis inflammatory stage, and in the prevention of recurrence of Crohn's disease in adults, SALOFALK must be taken reliably and consistently by the patient in order to ensure therapeutic success. Tablets should be swallowed whole before meals with plenty of fluid. Do not crush.

4.2 Recommended Dose and Dosage Adjustment

- For the treatment of acute ulcerative colitis, two 500 mg SALOFALK tablets, three or four times per day (total adult dose: 3 g/day – 4 g/day). Prolonged treatment may be required.
- Just For the prevention of recurrence of Crohn's disease in patients following bowel resection, the

total adult dose is 3 g/day in divided doses. Prolonged treatment is required.

Health Canada has not authorized an indication for pediatric use. See [1.1 Pediatrics](#).

4.4 Administration

Tablets should be taken consistently by the patient in order to ensure therapeutic success. Tablets should be swallowed whole before meals with liquid. Do not crush. Abrupt discontinuation is not recommended. Prolonged treatment may be required.

4.5 Missed Dose

If a dose of SALOFALK is missed, it should be taken as soon as possible, unless it is almost time for the next dose. A patient should not take two SALOFALK doses at the same time to make up for a missed dose.

5 OVERDOSAGE

There has been no clinical experience with mesalamine overdose. However, because mesalamine is an aminosalicylate, the symptoms of overdose may mimic the symptoms of salicylate overdose; therefore, measures used to treat salicylate overdose may be applied to mesalamine overdose. Under ordinary circumstances, local mesalamine absorption from the colon is limited. There is no specific antidote and treatment is symptomatic and supportive.

For management of a suspected drug overdose, contact your regional poison control centre.

6 DOSAGE FORMS, STRENGTHS, COMPOSITION AND PACKAGING

Table 1 – Dosage Forms, Strengths, Composition and Packaging

Route of Administration	Dosage Form / Strength/Composition	Non-medicinal Ingredients
Oral	Delayed release tablets/ 500 mg	Carnauba wax, colloidal silicon dioxide, glycine, hydroxypropyl methylcellulose, iron oxide, magnesium stearate, methacrylic acid copolymer, microcrystalline cellulose, polydimethyl siloxane, polysorbate, povidone, sodium carbonate, sodium hydroxide, talc, titanium dioxide, triethyl citrate.

SALOFALK is gluten-free and phthalate-free.

Each ochre colored, oblong, biconvex tablet of SALOFALK is supplied in bottles of 150 and 500 tablets.

7 WARNINGS AND PRECAUTIONS

General

SALOFALK should be used only if the benefits clearly outweigh the risks in patients with underlying bleeding or clotting disorders as well as during pregnancy and lactation.

Patients with renal dysfunction, or elevated Blood Urea Nitrogen (BUN), or elevated serum creatinine, or with proteinuria, should be carefully monitored while receiving SALOFALK.

Concomitant treatment with mesalamine can increase the risk of myelosuppression in patients receiving azathioprine or 6-mercaptopurine.

Acute Intolerance Syndrome

Mesalamine has been implicated in the production of an acute intolerance syndrome characterized by cramping, acute abdominal pain and bloody diarrhoea, sometimes fever, headache and a rash; in such cases prompt withdrawal is required. The patient's history of sulfasalazine intolerance, if any, should be re-evaluated. If a rechallenge is performed later in order to validate the hypersensitivity, it should be carried out under close supervision and only if clearly needed, giving consideration to reduced dosage. The possibility of increased absorption of mesalamine and concomitant renal tubular damage as noted in the preclinical studies must be kept in mind. Patients on concurrent mesalamine products which contain or release mesalamine and those with pre-existing renal disease, should be carefully monitored with urinalysis, and BUN and creatinine testing.

Carcinogenesis and Mutagenesis

Carcinogenicity studies in animals and mutagenicity tests were negative. See 16 NON-CLINICAL TOXICOLOGY.

Cardiovascular

Cardiac side effects, including pericarditis and myocarditis have been uncommonly reported with the use of mesalamine.

Cases of pericarditis have also been reported as manifestation of inflammatory bowel disease. Discontinuation of mesalamine may be warranted in some cases but rechallenge with mesalamine can be performed under careful clinical observation should the continued therapeutic need for mesalamine be present.

Driving and Operating Machinery

There are no data available on the effects of mesalamine on ability to drive and use machines.

Gastrointestinal

Epigastric pain, also commonly associated with inflammatory bowel disease and prednisone or sulfasalazine (SAS) therapy (18%), should be investigated in order to exclude pericarditis and pancreatitis either as adverse drug reactions to mesalamine or secondary manifestations of inflammatory bowel disease.

Patients with pyloric stenosis may have prolonged gastric retention of SALOFALK tablets which could delay release of mesalamine in the colon.

Hepatic/Biliary/Pancreatic

There have been reports of hepatic failure and increased liver enzymes in patients with pre-existing liver disease when treated with 5-Amino salicylic acid (5-ASA)/Mesalazine products. Therefore, SALOFALK is contraindicated in patients with severe hepatic impairment. See 2 CONTRAINDICATIONS. In patients with mild to moderate liver function impairment, caution should be exercised and SALOFALK should only be used if the expected benefit clearly outweighs the risks to the patients.

Renal

Reports of renal impairment, including minimal change nephropathy, and acute or chronic interstitial nephritis have been associated with mesalamine products and pro-drugs of mesalamine. SALOFALK is contraindicated in patients with severe renal impairment. See [2 CONTRAINDICATIONS](#). In patients with mild to moderate renal dysfunction history of renal disease or taking concomitant nephrotoxic drugs, caution should be exercised and SALOFALK should be used only if the benefits outweigh the risks.

Cases of nephrolithiasis have been reported with the use of mesalamine, including stones with a 100% mesalamine content. It is recommended to ensure adequate fluid intake during treatment.

Patients on mesalamine, especially those with pre-existing renal disease, should be carefully monitored with urinalysis, and BUN and creatinine testing. Initial assessment and periodic monitoring of the renal function is recommended since mesalamine is substantially excreted by the kidney, and prolonged mesalamine therapy may damage the kidneys. Discontinue SALOFALK if renal function deteriorates while on therapy.

Because elderly patients are more likely to have decreased renal function, closer monitoring of the renal function may be needed.

Sensitivity/Resistance

Caution should be exercised when mesalamine (5-ASA) is initially used in patients known to be allergic to sulfasalazine. These patients should be instructed to discontinue therapy if signs of rash or pyrexia become apparent. In case of an allergic reaction, appropriate measures (standard of care) should be taken.

Skin

Severe Cutaneous Reactions:

Severe cutaneous adverse reactions (SCARs), including Stevens-Johnson syndrome (SJS), Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) and toxic epidermal necrolysis (TEN), have been reported in association with mesalamine treatment. Mesalamine should be discontinued at the first appearance of signs and symptoms of severe skin reactions, such as skin rash, mucosal lesions, or any other sign of hypersensitivity.

Photosensitivity:

Patients treated with mesalamine or sulfasalazine who have pre-existing skin conditions such as atopic dermatitis and atopic eczema have reported more severe photosensitivity reactions. Advise patients to avoid sun exposure, wear protective clothing, and use a broad-spectrum sunscreen when outdoors.

7.1 Special Populations

7.1.1 Pregnant Women

SALOFALK should be used during pregnancy only if the benefits clearly outweigh the risks to the foetus. 5-ASA is known to cross the placental barrier, and no clinical studies have been performed in pregnant women.

Animal studies did not show evidence of impaired fertility or harm to the foetus due to mesalamine. See [16 NON-CLINICAL TOXICOLOGY](#), however, because animal reproduction studies are not always predictive of human response, SALOFALK should be used during pregnancy only if clearly needed.

7.1.2 Breast-feeding

There are no clinical trial studies in nursing women. SALOFALK should be used in nursing women only if the benefits to the mother clearly outweigh the risks to the child. Mesalamine and its main metabolite N-acetyl-5-ASA are excreted in breast milk. The concentration of mesalamine is much lower than in maternal blood, but the metabolite N-acetyl-5-ASA appears in similar concentrations.

When mesalamine is used in nursing women, infants should be monitored for changes in stool consistency. If the infant develops diarrhoea, breast-feeding should be discontinued. Cases of diarrhoea in breastfed infants exposed to mesalamine have been reported.

Isolated weight decrease in nursing infant has been reported during post-marketing experience with mesalamine.

7.1.3 Pediatrics

Pediatrics: No data are available to Health Canada; therefore, Health Canada has not authorized an indication for pediatric use.

7.1.4 Geriatrics

Clinical studies of mesalamine did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger patients. In general, dose selection for an elderly patient should be cautious, reflecting the greater frequency of decreased hepatic, renal, or cardiac function or concomitant disease or other drug therapy.

Mesalamine is substantially excreted by the kidney, and the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Because elderly patients are more likely to have decreased renal function, it may be useful to monitor renal function.

8 ADVERSE REACTIONS

8.1 Adverse Reaction Overview

Hypersensitivity reactions have been reported in a sub-group of patients known to be allergic to sulfasalazine including rash, pyrexia, and dizziness with reactions occurring at the onset of therapy and resolving promptly following discontinuation.

Other manifestations of hypersensitivity reported with mesalamine include acute pancreatitis, hepatitis, pericarditis, interstitial nephritis, interstitial pneumonia and pleural effusion. Interstitial pneumonia, pancreatitis and pericarditis have also been reported as manifestations of inflammatory bowel disease.

As with all 5-ASA products, exacerbations of ulcerative colitis characterized by cramping acute abdominal pain and diarrhoea have been reported with mesalamine.

Other reported side effects include headache, flatulence, nausea, and hair loss, but do not appear to be common. Retreatment is not always associated with repeated hair loss. Aplastic anaemia has been reported in the literature with unspecified formulations of mesalamine.

8.2 Clinical Trial Adverse Reactions

Clinical trials are conducted under very specific conditions. The adverse reaction rates observed in the clinical trials; therefore, may not reflect the rates observed in practice and should not be compared to the rates in the clinical trials of another drug. Adverse reaction information from clinical trials may be useful in identifying and approximating rates of adverse drug reactions in real-world use.

Table 2 - Clinical Trial Adverse Events Reported in > 0.1% of Patients

	SALOFALK N=[841] (%)	Placebo N=[176] (%)
Cardiac disorders		
Pericarditis	0.1	0
Gastrointestinal disorders		
Abdominal pain	7.9	7.9
Flatulence	6.0	4.5
Nausea	5.6	6.8
Diarrhoea	2.1	3.9
Abdominal distension	1.4	1.1
Haemorrhoids	1.3	0
Proctalgia	1.1	0
Constipation	0.9	2.2
Anal discomfort	0.5	1.7
Pancreatitis	0.1	0
Condition aggravated	0.1	0
General disorders and administration site conditions		
Fatigue	3.3	4.5
Pyrexia	3	0
Administration site reactions	1.3	0.5
Edema peripheral	0.5	6.2
Asthenia	0.1	2.2
Infections and infestations		
Influenza		
Urinary tract infection	5.2	0.5
Upper respiratory tract infection	0.5	2.2
	0.1	0.5
Musculoskeletal, and connective tissue disorders		
Arthralgia	2.0	1.1
Back pain	1.3	0.5
Nervous system disorders		
Headache	6.7	11.3
Dizziness	1.7	2.8
Insomnia	0.1	1.7
Respiratory, thoracic, and mediastinal disorders		
Pharyngolaryngeal pain	2.0	2.8

	SALOFALK N=[841] (%)	Placebo N=[176] (%)
Skin and subcutaneous tissue disorders		
Rash	2.8	2.2
Spots	2.2	5.1
Pruritus	1.1	0.5
Alopecia	0.8	1.1

8.5 Post-Market Adverse Reactions

The following adverse reactions have been identified during the post-approval use of SALOFALK. Because these reactions are reported voluntarily from a population of uncertain size, it is not always possible to reliably estimate their frequency or establish a causal relationship to drug exposure.

Blood and Lymphatic System Disorders: Agranulocytosis

Cardiac Disorders: Myocarditis

Gastrointestinal Disorders: Abdominal discomfort, Abdominal pain (upper, lower), Diarrhoea, Faeces discoloured, Flatulence, Glossodynia, Nausea, Tongue discoloration, Tongue oedema

General Disorders And Administration Site Conditions: Fatigue, Medication residue, Pyrexia, Mesalamine-induced acute intolerance syndrome

Hepatobiliary Disorders: Hepatic impairment, including hepatic failure or hepatitis

Immune System Disorder: Anaphylactic reaction

Investigations: Sperm count decreased

Musculoskeletal And Connective Tissue Disorders: Back pain, Neck pain

Nervous System Disorders: Dizziness, Headache, Intracranial hypertension

Renal And Urinary Disorders: Chromaturia, Nephritis interstitial, Nephrolithiasis

Respiratory, Thoracic And Mediastinal Disorders: Allergic and fibrotic lung reactions, Eosinophilic pneumonia, Interstitial alveolitis, Interstitial pneumonia, Lung infiltration, Pleurisy

Skin And Subcutaneous Tissue Disorders: Acute febrile neutrophilic dermatosis, Alopecia, Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS), Erythema, Photosensitivity, Pruritus, Rash, Stevens-Johnson Syndrome (SJS), Toxic Epidermal Necrolysis (TEN), Urticaria

9 DRUG INTERACTIONS

9.2 Drug Interactions Overview

Interaction between azathioprine, 6-mercaptopurine and aminosalicylates (including mesalamine) can increase the risk of leucopenia. Other potential interactions with a number of drugs could occur. See [9.4 Drug-Drug Interactions](#).

9.4 Drug-Drug Interactions

Interaction between azathioprine, 6-mercaptopurine and aminosalicylates including mesalamine, has been reported with oral mesalamine. Concomitant treatment with mesalamine can increase the risk of myelosuppression in patients receiving azathioprine or 6-mercaptopurine. An increase in whole blood 6-thioguanine nucleotide (6-TGN) concentrations has been reported although the mechanism of this interaction remains unclear.

Mesalamine could also increase renal and hematologic toxicity of methotrexate by additive effect and diminished absorption of folic acid.

The hypoglycemic effect of sulfonylureas may be enhanced. Interactions with coumarin, methotrexate, probenecid, sulfapyrazone, spironolactone, furosemide and rifampicin cannot be excluded. Potentiation of undesirable glucocorticoid effects on the stomach is possible.

A theoretical interaction of salicylates with Varicella Virus Vaccine (chicken pox vaccine) might increase the risk of Reye's syndrome; as a result, the use of salicylates (including mesalamine) is discouraged for six weeks following Varicella vaccination.

The concurrent use of mesalamine with known nephrotoxic agents, including nonsteroidal anti-inflammatory drugs (NSAIDs) may increase the risk of nephrotoxicity. Monitor patients taking nephrotoxic drugs for changes in renal function and mesalamine-related adverse reactions.

9.5 Drug-Food Interactions

Interactions with food have not been established.

9.6 Drug-Herb Interactions

Interactions with herbal products have not been established.

9.7 Drug-Laboratory Test Interactions

Several reports of possible interference with measurements, by liquid chromatography, of urinary normetanephrine causing a false-positive test result have been observed in patients exposed to sulfasalazine or its metabolite, mesalamine/mesalazine.

10 CLINICAL PHARMACOLOGY

10.1 Mechanism of Action

The mechanism of action of mesalamine (5-aminosalicylic acid, 5-ASA) is not fully understood, but appears to be topical rather than systemic. Inflammatory intestinal disease is often accompanied by diffuse tissue reactions including ulceration and cellular infiltration of lymphocytes, plasma cells, eosinophils, polymorphonuclear cells and activated phagocytic cells.

The interference of mesalamine with either leukotriene or prostaglandin metabolism may play a major role in suppressing the inflammatory response mechanism. 5-ASA prevents accumulation of thromboxane B₂ and 6-keto-prostaglandin F₁. Both 5-ASA and SAS reverse H₂O, and Cl⁻ secretion and increase Na⁺ secretion in experimentally-induced colitis in guinea pigs. SAS and 5-ASA are known to inhibit polymorphonuclear cell migration possibly via lipoxygenase inhibition at concentrations lower than those required to inhibit prostaglandin synthesis. It is thus possible that both SAS and 5-ASA are capable of inhibiting both pathways via lipoxygenase inhibition.

Intestinal secretion is stimulated not only by prostaglandins but also by the metabolites of arachidonic acid generated via the lipoxygenase pathway. Upon phagocytic activation and arachidonic acid metabolism activation, reactive oxygen metabolites are generated. 5-ASA acts as a dose dependent antioxidant which scavenges oxygen derived free radicals produced by activated phagocytes. In addition, 5-ASA associates with the membrane surface, allowing chain breaking anti-oxidant activity when peroxidation is initiated within the membrane. 5-ASA is able to block initiation of oxidation from solution as well as propagation within the membrane. 5-ASA also inhibits the formation of both eicosanoids and cytokines.

10.2 Pharmacodynamics

SALOFALK contains mesalamine (5-aminosalicylic acid, 5-ASA), the active principle of the prodrug sulfasalazine. Although the 5-ASA mode of action is not clear, it appears to be multi-factorial. 5-ASA is thought to affect the inflammatory process through its ability to inhibit prostaglandin synthesis, interfere with leukotriene synthesis and consequent leukocyte migration as well as act as a potent scavenger of free radicals. Regardless of the mode of action, 5-ASA appears to be active mainly topically rather than systemically.

Animal Studies

5-ASA (mesalamine) is the active moiety of the prodrug sulfasalazine which acts to suppress inflammatory bowel disease. Animal pharmacology tests were conducted on 5-ASA using the oral route of administration for most tests, at a dose of 500 mg/kg in order to simulate practice relevant conditions. No adverse effect of 5-ASA on the following parameters or in the following animal pharmacology tests could be established: tremorine antagonism, hexobarbital sleep time, motor activity, anticonvulsant action (metrazol and electric shock), blood pressure, heart rate, respiratory rate (up to 10 mg/kg, i.v.), tocolysis (antispasmodic assay), local anaesthesia, antihyperthermal and antipyretic effects. In the paw-edema test with carrageen injection, 200 mg/kg per os proved ineffective, but 500 mg/kg 5-ASA per os exhibited mild antiphlogistic action.

In the animal renal function tests (natriuresis and diuresis), no biologically relevant effects of 200 mg/kg per os were demonstrated. After 600 mg/kg, marked functional changes were observed: increases in total urinary output, natriuresis and proteinuria. The urinary sediment contained an increased number of erythrocytes and epithelial cells. Both potassium elimination and specific weight were reduced. It can be concluded from these experiments that even high doses of 5-ASA have no effect on vital parameters. Disturbances in renal function are to be expected only at dosages equivalent to a single dose at least 8 to 10 times the daily dose in man.

10.3 Pharmacokinetics

Absorption

Oral administration of mesalamine enteric-coated tablets allows passage through the stomach intact, despite an average gastric dwell time of close to 3 hours in non-fasting patients and delivery, at pH of 6.0, to sites of topical action in the lower gastrointestinal tract. Disintegration of mesalamine enteric-coated tablets usually occurs in the terminal ileum and proximal colon, allowing patients with ileal involvement to benefit from the drug. At the same time, most side effects attributed to the sulfapyridine moiety of SAS are avoided.

In a cross-over study to determine gastrointestinal transit and disintegration characteristics in the fed and fasted state in healthy subjects (n=8), gastric emptying of mesalamine enteric-coated tablets was delayed by the presence of food. The tablets tended to disintegrate about five hours after leaving the

stomach. Although the time between dosing and tablet disintegration was longer in fed subjects, there was no significant difference in disintegration times between the fasted and fed subjects once the tablet left the stomach. The enteric coating appeared to be unaffected by gastric retention time. Site of disintegration was affected by the rate of intestinal transit. In three of four subjects showing the slowest intestinal transit, disintegration occurred in the ileum. In eight instances (50%; 5 fed/3 fasted subjects), disintegration occurred in the ascending colon. In three instances, disintegration occurred beyond the ascending colon (1 fed/2 fasted). In the remaining two instances, the precise point of disintegration could not be accurately determined.

In a study of 13 patients with inflammatory bowel disease (six with ulcerative colitis, one with total colectomy, seven with Crohn's disease, two with right hemi-colectomy), the tablets disintegrated with a mean time of 3.2 hours after leaving the stomach. For nine of the 11 patients for whom disintegration time could be accurately determined, this occurred within one hour of the mean time. Overall, tablet disintegration occurred in the small intestine in over 60% of the patients. Subsequently, the tablet became finally dispersed and remained in the colon for many hours.

Bioavailability has further been confirmed by measurement of 5-aminosalicylic acid in the ileostomy effluent of patients with or without small bowel resection receiving mesalamine enteric-coated tablets. Approximately 53% of mesalamine thus administered could be recovered in the effluent.

Pharmacokinetic data suggest that oral 5-ASA (mesalamine) is partially absorbed, excreted rapidly (range $t_{1/2}$ = 0.4-2.4 hours), and partially recovered unchanged in the faeces.

Distribution:

In patients with active ulcerative colitis of Crohn's disease receiving 500 mg of oral 5-ASA t.i.d., mean steady state plasma levels of 5-ASA and N-acetyl-5-ASA averaged 0.7 and 1.2 mcg/mL respectively and were reached within 4-6 hours after administration. Treatment with a smaller dose (250 mg t.i.d.) achieved levels of 0.4 and 1.0 mcg/mL, respectively.

Metabolism:

5-ASA is metabolized by acetylation. The only major metabolite of 5-ASA identified in man is N-acetyl-5-aminosalicylic acid (N-Ac-5-ASA). The site of metabolism has not been elucidated. 5-ASA and its major metabolite N-acetyl-5-aminosalicylic acid are short lived in serum being excreted rapidly. N-acetyl-5-ASA exhibits a half life-reported at 5-10 hours. The elimination half life of 5-ASA appears to be dose dependent (1.4 ± 0.6 hours at 500 mg t.i.d. vs. 0.6 ± 0.2 hours at 250 mg t.i.d.).

The influence of renal and hepatic impairment on pharmacokinetics of mesalamine has not been evaluated.

Elimination

The kidneys excrete both free 5-ASA and acetylated forms (N-Ac-5-ASA) into the urine. Urinary clearance of absorbed drug occurs rapidly, mainly as the acetylated metabolite. The mean recovery rate in urine following oral administration of 5-ASA has been estimated at approximately 44%. A fecal recovery rate of 35% consisted of both unabsorbed drug and the acetylated metabolite.

11 STORAGE, STABILITY AND DISPOSAL

SALOFALK should be stored at controlled room temperature (15-30°C). Protect from exposure to light and moisture.

Disposal of SALOFALK should be in keeping with recommendations governing the disposal of pharmaceutical waste.

12 SPECIAL HANDLING INSTRUCTIONS

There are no special handling instructions.

PART II: SCIENTIFIC INFORMATION

13 PHARMACEUTICAL INFORMATION

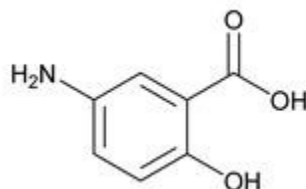
Drug Substance

Proper name: 5-aminosalicylic acid, mesalamine

Chemical name: 5-aminosalicylic acid (5-ASA)

Molecular formula and molecular mass: C₇H₇NO₃ 153.14

Structural formula:



Physicochemical properties:

Description: 5-aminosalicylic acid is a light tan to pink, needle shaped, crystalline powder.

Solubility: Slightly soluble in water, very slightly soluble in methanol and practically insoluble in chloroform; soluble in diluted HCl and diluted alkali hydroxides.

Melting Range: 272°-280°C

14 CLINICAL TRIALS

14.1 Clinical Trials by Indication

Ulcerative colitis

Table 3 - Summary of patient demographics for clinical trials in ulcerative colitis

Study #	Study design	Dosage, route of administration and duration	Study subjects (n)
1	placebo-controlled, parallel group, multicentre study	4g/day Salofalk, oral, 6 weeks	n = 47
		2g/day Salofalk, oral, 6 weeks	n = 45
		Placebo, oral, 6 weeks	n = 44
2	randomized, double-blind, parallel group study	1.5 g/day mesalamine, oral, 8 weeks	n = 87
		3.0 g/day sulfasalazine, oral, 8 weeks	n = 77

A placebo-controlled, parallel group, multicentre study was conducted in 136 out-patients with ulcerative colitis. Patients were administered SALOFALK tablets at doses of 4 g/day (n=47) and 2 g/day (n=45), or placebo (n=44) for 6 weeks.

In an 8-week randomized, double-blind, parallel group study mesalamine tablets (1.5 g/day) were compared to sulfasalazine (3.0 g/day) in patients with mild to moderate ulcerative colitis.

Study Results for Ulcerative colitis

Study 1: At Week 3, patients in the 4 g mesalamine group were rated less severe than placebo patients for rectal bleeding, mucosal appearance and physician’s overall rating of disease severity (p<0.05). Although there was improvement for patients in the 2 g mesalamine group relative to placebo, differences between the two groups were not statistically significant. Similar differences between the two groups were seen at Week 6.

Study 2: Of the 164 patients eligible for efficacy analysis, 87 received mesalamine and 77 sulfasalazine. After 4 weeks, 71% and 66% of patients taking mesalamine and sulfasalazine, respectively, had achieved remission (p=0.338). At 8 weeks, 74% and 81% achieved remission, respectively (p=0.835). Endoscopic remission at 8 weeks was recorded in 49% of patients taking mesalamine and 47% taking sulfasalazine (p=0.272).

Crohn’s disease

Table 4 - Summary of patient demographics for clinical trials in Crohn’s disease

Study #	Study design	Dosage, route of administration and duration	Study subjects (n)
3	randomized, controlled study	1.5 g mesalamine twice daily, oral, up to 72 months	n = 47
		Placebo twice daily, oral, up to 72 months	n = 44

Recurrence of Crohn’s disease after surgical resection was investigated in a randomized, controlled study in which patients received 1.5 g mesalamine tablets twice a day or placebo, within 8 weeks following surgery, for up to 72 months.

Study Results for Crohn’s disease

Study 3: At yearly intervals, patients were assessed. Symptomatic recurrence was defined as having symptoms judged to be caused by Crohn’s disease that required treatment plus radiological or endoscopic evidence of disease. The symptomatic recurrence rate in the treatment group was 31% (27 of 87) compared with 41% (31 of 76) in the control group (p=0.031). Using an intent-to-treat analysis, the relative risk of developing recurrent disease was 0.628 (90% CI, 0.40-0.97) for patients in the treatment group (p=0.039; one-tail test) and 0.532 (90% CI, 0.32-0.87) using an efficacy analysis. The endoscopic and radiological rate of recurrence was also significantly decreased with a risk of 0.635 (90%, CI 0.44-0.91) for the efficacy analysis.

15 MICROBIOLOGY

No microbiological information is required for this drug product.

16 NON-CLINICAL TOXICOLOGY

General Toxicology: Animal studies to date show the kidney to be the only significant target organ for 5-ASA toxicity in rats and dogs. At high doses, the lesions produced consisted of papillary necrosis and multifocal proximal tubular injury. In rats, the no-effect levels were 160 mg/kg/day for females and 40 mg/kg/day for males (minimal and reversible tubular lesions seen) after 13 weeks of oral administration. In dogs, the no-effect level in both males and females was 40 mg/kg/day after 6 months of oral administration. In this six-month oral toxicity study in dogs, doses of 80 mg/kg/day and higher, caused renal pathology similar to that described for the rat. In a rectal toxicity study of mesalamine suppositories in dogs, a dose of 166.6 mg/kg (about 3.0 times the recommended human intra-rectal dose, based on body surface area) produced chronic nephritis and pyelitis. Aside from gastric lesions, heart lesions and bone marrow depression seen in some of the rats at the 640 mg/kg level and considered secondary effects of kidney damage, no other signs of systemic toxicity were noted at daily doses up to 160 mg/kg in rats and 120 mg/kg in dogs for 13 weeks and six months, respectively.

In the 12-month oral toxicity study in dogs, keratoconjunctivitis sicca (KCS) occurred at oral doses of 40 mg/kg/day and above.

Carcinogenicity: Administration of doses of 0, 50, 100 and 320 mg/kg/day for 127 weeks in rats did not result in significant differences in unscheduled deaths, clinical signs, nodules or masses, between groups. Ophthalmoscopic investigations revealed no treatment-related changes. Treatment with SALOFALK was not associated with oncogenic changes or an increased tumor risk. The assessment of hematology, clinical biochemistry and urinalysis indicated no changes of toxicological significance at 13, 26 and 52 weeks of treatment.

After 127 weeks, analysis of the lesions indicated slight substance-related and dose-dependent toxic changes as degenerative kidney damage and hyalinization of tubular basement membrane and Bowman's capsule in the 100 mg and 320 mg/kg/day groups. Ulceration of the gastric mucosa and atrophy of the seminal vesicles were also more frequent in the 320 mg/kg/day group.

Genotoxicity: 5-ASA was not mutagenic in the Ames test, E. coli reverse mutation assay, mouse micronucleus test, sister chromatid exchange assay, or in a chromosomal aberrations assay. In contrast, sulfapyridine, which is the other primary metabolite of salicylazosulfapyridine, has tested positive in certain mutagenicity tests.

Reproductive and Developmental Toxicology: Teratology studies with 5-ASA have been performed in rats at oral doses up to 320 mg/kg/day and in rabbits at oral doses up to 495 mg/kg/day. The battery of tests completed to date has shown that 5-ASA is devoid of embryotoxicity and teratogenicity in rats and rabbits; that it does not affect male rat fertility after five weeks of oral administration at 296 mg/kg/day; and that it lacks the potential to affect late pregnancy, delivery, lactation or pup development in rats.

Other Studies

Nephrotoxic potential of 5-aminosalicylic acid: Owing to its structural relationship to phenacetin, the aminophenols and salicylates, 5-ASA was included in a series of compounds studied following identification of antipyretic-analgesic nephropathy in humans. Calder et al. has reported in rats that in addition to the proximal tubule necrosis seen with acetylsalicylic acid (e.g. Aspirin®) and phenacetin derivatives, 5-ASA produced papillary necrosis, following single intravenous doses ranging from 150 mg/kg to 872 mg/kg.

Diener et al. have shown that oral doses of 5-ASA of 30 mg/kg and 200 mg/kg daily for four weeks failed to produce any adverse effects on kidney function or histology in rat.

In a 13-week rat study, there were no renal lesions after four weeks in the animals receiving up to 160 mg/kg orally per day, but severe papillary necrosis and proximal tubular injury were seen in most animals receiving 640 mg/kg orally per day. At 13 weeks, the female animals were free of pathology up to 160 mg/kg; minimal and reversible lesions in the tubules occurred in a few males (with no changes in renal function) at the 40 mg/kg/day level. After six months of oral administration in dogs, no toxicity was seen in the 40 mg/kg/day group. At 80 mg/kg/day, two of eight treated dogs showed slight to moderate renal papillary necrosis. These dogs as well as two others showed minimal to moderate tubular lesions. At 120 mg/kg/day, two females had slight papillary necrosis. These and two others showed minimal to moderate tubule injury.

PATIENT MEDICATION INFORMATION

READ THIS FOR SAFE AND EFFECTIVE USE OF YOUR MEDICINE

Pr **SALOFALK**[®]

Mesalamine delayed release tablets

Read this carefully before you start taking **SALOFALK** and each time you get a refill. This leaflet is a summary and will not tell you everything about this drug. Talk to your healthcare professional about your medical condition and treatment and ask if there is any new information about **SALOFALK**.

What is SALOFALK used for?

SALOFALK is used to:

- treat inflammation of the lining of the large bowel and rectum (acute ulcerative colitis).
- prevent the return of Crohn's disease in patients who have had bowel resection, a surgery to remove part of the intestines.

How does SALOFALK work?

SALOFALK is believed to reduce the activity of certain chemicals in your body that cause inflammation (e.g., prostaglandins). This helps to reduce the swelling and pain in your rectum and lower part of your large bowel.

What are the ingredients in SALOFALK?

Medicinal ingredients: mesalamine (me-SAL-a-meen), also known as 5-aminosalicylic acid, 5-ASA or mesalazine.

Non-medicinal ingredients: carnauba wax, colloidal silicon dioxide, glycine, hydroxypropyl methylcellulose, iron oxide, magnesium stearate, methacrylic acid copolymer, microcrystalline cellulose, polydimethyl siloxane, polysorbate, povidone, sodium carbonate, sodium hydroxide, talc, titanium dioxide, triethyl citrate.

SALOFALK is gluten-free and phthalate-free.

SALOFALK comes in the following dosage forms:

Delayed release tablets, 500 mg.

Do not use SALOFALK if:

- you have severe kidney problems
- you have severe liver problems
- you are allergic to mesalamine or to any of the non-medicinal ingredients in SALOFALK, or component of the container (see **What are the ingredients in SALOFALK?**)

- you have stomach or small intestinal ulcers
- you have a blockage in your urinary tract
- you have a sensitivity to a family of drugs known as salicylates, which includes acetylsalicylic acid (ASA)
- you are unable to swallow the tablet whole

To help avoid side effects and ensure proper use, talk to your healthcare professional before you take SALOFALK. Talk about any health conditions or problems you may have, including if you:

- have any kidney or liver problems
- have heart problems, including a history of heart inflammation (which may be the result of an infection of the heart)
- have stomach pain
- have had an unusual or allergic reaction to sulfasalazine (SAS), an ingredient in medicines used to treat ulcerative colitis
- have bleeding or clotting problems
- have pyloric stenosis (a narrowing of the outlet from the stomach that causes contents of the stomach to remain there for a longer period of time)

Other warnings you should know about:

Serious Side Effects: SALOFALK can cause serious side effects:

- **Serious skin reactions:** Severe cutaneous adverse reactions (SCAR), including Stevens-Johnson syndrome (SJS), Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) and toxic epidermal necrolysis (TEN) have happened in people taking SALOFALK. These skin reactions are serious. Stop taking SALOFALK and get immediate medical help if you experience any signs of a severe skin reaction, such as mouth sores, a severe skin rash, or any other signs of an allergic reaction.
- **Kidney problems, including kidney stones:** People taking SALOFALK can develop kidney stones or other kidney problems. Symptoms may include blood in your urine, urinating more often and pain in your back, side, belly or groin. Be sure to drink enough liquids while you are taking SALOFALK. Talk to your healthcare professional about how much water or other liquids you should be drinking.
- **Acute Intolerance Syndrome:** Symptoms of acute intolerance syndrome can be similar to a flare of your condition. If you think you are experiencing a flare, talk to your healthcare professional immediately.
- **Heart problems:** These include inflammation of the heart muscle (myocarditis) and inflammation of the tissue around the heart (pericarditis).
- **Blood problems:** This includes low numbers of all types of blood cells (myelosuppression).
- **Liver problems:** This included liver failure.

For more information on these and other serious side effects see the **Serious side effects and what to do about them** table, below.

Pregnancy and Breastfeeding:

- Talk to your healthcare professional if you are pregnant or thinking of becoming pregnant.
- You should not breastfeed while you are taking SALOFALK. SALOFALK passes into breastmilk.
- If you breastfeed your baby while taking SALOFALK, your baby could develop/start to have diarrhea. It is important to monitor your baby's stool and contact your healthcare professional right away if they have diarrhea. Your healthcare professional may advise you to stop breastfeeding your baby.

Sensitivity to the sun: Tell your healthcare professional if you have eczema or atopic dermatitis. Your skin may be more sensitive to sunlight when taking SALOFALK. You should avoid the sun and wear protective clothing and a broad-spectrum sunscreen when you are outdoors.

Blood tests: SALOFALK can cause abnormal blood test results. Your healthcare professional will do blood tests before you start taking SALOFALK and periodically during treatment. They will check the health of your liver and kidneys as well as the levels of your red and white blood cells and monitor you for other side effects. Your healthcare professional will decide when to perform blood tests and will interpret the results.

Tell your healthcare professional about all the medicines you take, including any drugs, vitamins, minerals, natural supplements or alternative medicines.

The following may interact with SALOFALK:

- Other medicines used to treat ulcerative colitis, such as azathioprine, 6-mercaptopurine, aminosaliculates
- sulfonyleureas, used to treat diabetes
- anti-inflammatory drugs (NSAIDS), used to treat pain and inflammation
- anticoagulants, used to thin the blood and prevent blood clots, such as coumarin
- methotrexate, used to treat cancer and severe inflammatory conditions
- medicines used to treat gout, such as probenecid, sulfinpyrazone
- medicines used to treat high blood pressure, such as spironolactone, furosemide
- rifampicin, an antibiotic used to treat bacterial infections
- the chicken pox vaccine (varicella virus vaccine)

How to take SALOFALK:

- Take SALOFALK exactly as your healthcare professional has told you. Your healthcare professional will decide on the dose that is right for you. Do not stop taking SALOFALK without talking to your healthcare professional.
- Tablets should be swallowed whole before meals with liquid. Do not crush the tablets.

Usual dose:

For the treatment of acute ulcerative colitis: Two 500 mg SALOFALK tablets, three or four times daily.

For the prevention of the return of Crohn's disease in patients after bowel resection: 3000 mg per day in divided doses.

Overdose:

If you think you, or a person you are caring for, have taken too much SALOFALK, contact a healthcare professional, hospital emergency department, or regional poison control centre immediately, even if there are no symptoms.

Missed Dose:

If you miss a dose of SALOFALK, take your dose as soon as possible, unless it is almost time for the next dose. Do not take two doses at the same time to make up for a missed dose.

What are possible side effects from using SALOFALK?

These are not all the possible side effects you may have when taking SALOFALK. If you experience any side effects not listed here, tell your healthcare professional.

Side effects may include:

- anorectal pain or discomfort
- stomach pain or discomfort
- nausea
- bloating, gas
- constipation
- diarrhea
- discoloured stool
- dizziness
- fever
- flu-like symptoms
- hemorrhoids
- hair loss
- headache
- inflammation/swelling of the throat or tongue
- tongue discoloration
- burning or tingling sensation in the mouth
- itching, rash, skin redness
- joint, back or neck pain
- sleeplessness
- swollen hands or lower legs

- tiredness or weakness
- abnormal urine color
- cough
- decrease in sperm count

Serious side effects and what to do about them			
Symptom / effect	Talk to your healthcare professional		Stop taking drug and get immediate medical help
	Only if severe	In all cases	
UNCOMMON			
Kidney stones (hard little pebbles that form in your kidneys): blood in urine, urinating more often, pain in your back, side, belly or groin		✓	
Urinary tract infection: strong, persistent urge to urinate, pain or burning when urinating, bloody, cloudy or strong smelling urine, passing frequent, small amounts of urine		✓	
UNKNOWN			
Pancreatitis (inflammation of the pancreas): abdominal pain, nausea, vomiting, fever, rapid heartbeat, feeling tired			✓
Allergic reaction: rash, hives, itching, fever, swelling of the mouth, lips, tongue or throat, difficulty in swallowing or breathing			✓
Heart problems (including myocarditis, pericarditis or heart inflammation): chest pain, fast or irregular heartbeat, fatigue, fever, difficulty in breathing, accumulation of fluid in the lung, cough			✓
Kidney problems (inflammation of the kidney or kidney failure): blood in the urine, fever, increased or decreased urine output, mental status changes (drowsiness, confusion, coma), rash, swelling of the body, weight gain (from retaining fluid)			✓
Liver problems (including liver failure): severe abdominal pain, nausea, vomiting, yellowing of the skin and eyes, loss of appetite, bloating and distension, Dark urine, pale stool			✓
Acute intolerance syndrome: cramping, stomach pain, bloody and excessive stools, fever, headache, rash			✓
Lung problems: difficulty in breathing, dry cough, fever, chills, sweating, body aches, generally feeling unwell			✓

Serious side effects and what to do about them			
Symptom / effect	Talk to your healthcare professional		Stop taking drug and get immediate medical help
	Only if severe	In all cases	
Blood problems (low levels of one or more types of blood cells): fatigue, difficulty in breathing with exertion, rapid or irregular heartbeat, pale skin, frequent or prolonged infections, unexplained or easy bruising, nosebleeds, bleeding gums, prolonged bleeding from cuts, skin rash, dizziness, headache			✓
Serious skin reactions (SCAR, DRESS, SYS, TEN): reddish, flat circular patches with blisters on the skin or inside the mouth, eyes, nose, or genitals, fever, severe skin rash, peeling skin, swollen lymph glands, flu-like feeling, yellow skin or eyes, shortness of breath, dry cough, chest pain or discomfort, feeling thirsty, urinating less often			✓
Pleurisy (accumulation of fluid in the lungs): dry cough, chest pain, difficulty breathing			✓
Increased pressure in brain: headache which may originate behind your eyes and worsen with eye movements, with blurred or dimmed vision, double vision, seeing light flashes, difficulty seeing to the side, and brief or permanent vision loss, dizziness, nausea, vomiting, ringing in ears			✓
Worsening of ulcerative colitis: worsening of stomach cramps or pain or diarrhea		✓	
Photosensitivity (sensitivity of the skin to the sun): rash, redness, blisters, itching and burning when the skin is exposed to the sun or UV light	✓		

If you have a troublesome symptom or side effect that is not listed here or becomes bad enough to interfere with your daily activities, tell your healthcare professional.

Reporting Side Effects

You can report any suspected side effects associated with the use of health products to Health Canada by:

- Visiting the Web page on Adverse Reaction Reporting (<https://www.canada.ca/en/health-canada/services/drugs-health-products/medeffect-canada.html>) for information on how to report online, by mail or by fax; or
- Calling toll-free at 1-866-234-2345.

NOTE: Contact your health professional if you need information about how to manage your side effects. The Canada Vigilance Program does not provide medical advice.

Storage:

SALOFALK should be stored at room temperature (15-30°C). Protect from exposure to light and moisture.

Keep out of reach and sight of children.

If you want more information about SALOFALK:

- Talk to your healthcare professional.
- Find the full product monograph that is prepared for healthcare professionals and includes this Patient Medication Information by visiting the Health Canada website: (<https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/drug-product-database.html>); the manufacturer's website, www.abbvie.ca or by calling 1-888-704-8271.

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