For use of a Registered Medical Practitioner, Hospital or Laboratory only.

OSMOWIN®

Lactulose Solution USP

Description

Osmowin® (Lactulose Solution USP) is a synthetic disaccharide in solution form for oral or rectal administration.

Each 15 ml of Osmowin® (Lactulose Solution USP) contains Lactulose Concentrate USP equivalent to Lactulose 10 g.

Lactulose Solution is a light amber coloured syrup with a pleasant lemon flavour. The chemical name for lactulose is 4-O-β-D-galactopyranosyl – D-fructofuranose.

Indications

1. Management of Constipation.
2. Management of Hepatic Encephalopathy.

Clinical Pharmacology

Lactulose Solution is poorly absorbed from the gastrointestinal tract and no enzyme capable of hydrolysis of this disaccharide is present in human gastrointestinal tissue. As a result oral doses of Lactulose Solution reach the colon virtually unchanged. In the colon, Lactulose Solution is broken down primarily to lactic acid (and also to small amounts of formic and acetic acids) by the action of colonic bacteria, which results in an increase in osmotic pressure and slight acidification of the colonic contents. This in turn causes an increase in stool water content and passage of soft, formed feces in 1 to 3 days.

Lactulose reduces intestinal absorption of ammonia, probably by a combination of effects, including (1) reduced production and increased utilization of ammonia by intestinal bacteria; (2) ion trapping of ammonia as NH_4^+ (due to reduction of colonic luminal pH by the bacterial metabolism of lactulose); (3) excretion of ammonia in the feces consequent to trapping of ammonia as NH_4^+ in the acidic luminal environment; (4) reduction in ammonia absorption as a result of a decrease in colonic transit time; and (5) enhanced laxation. The sum of these effects is a significant lowering of blood ammonia in patients with portal hypertension and hepatic encephalopathy associated with chronic liver disease.

Lactulose does not exert its effect until it reaches the colon. Transit time through the colon may be slow; therefore, 24 to 48 hours may be required to produce normal bowel movement. When given orally, only small amounts reach the blood. Urinary excretion is ≤ 3% and is essentially complete within 24 hours.

Dosage & Administration

Treatment of Constipation: The daily maintenance dose for the management of constipation varies widely but may be as low as 15 to 30 ml (10 to 20 gm of Lactulose) daily, as a single dose or divided. Larger doses of up to 60 ml/ day (40 gm lactulose) sometimes are required, and the full effect of lactulose may not be attained for a few days.

Prevent and Treat Hepatic Encephalopathy:

Adults: 30 to 45 ml, tid or qid. Adjust dosage every day or two to produce 2 or 3 soft stools daily with a fecal pH of 5 to 5.5. Hourly doses of 30 to 45 ml may be used to induce rapid laxation in the initial phase of therapy.

When the laxative effect has been achieved, reduce dosage to recommended daily dose. It is important not to cause diarrhoea in these patients.

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Improvement may occur within 24 hours, but may not begin before 48 hours or later. Continuous long-term therapy is indicated to lessen severity and prevent recurrence of hepatic encephalopathy.

Children: For older children and adolescents, the total daily dose is 40 to 90 ml. If the initial dose causes diarrhoea, reduce immediately. If diarrhoea persists, discontinue use.

Enema Dosage: Lactulose may be given as a retention enema via a rectal balloon catheter. In adults, 300 ml should be mixed with 700 ml of water/ physiological saline retained for 30-60 minutes. Osmowin enema may be repeated every 4-6 hours. Maintenance dose has to be adjusted to individual response and to produce 2-3 soft stools daily.

Contraindications

Patients who require a low galactose diet.

Precautions

Monitoring: In the overall management of hepatic encephalopathy, there is serious underlying liver disease with complications such as electrolyte disturbance (e.g. hyperkalemia and hypernatremia) which may require other specific therapy. Elderly, debilitated patients who receive Lactulose for > 6 months should have serum electrolytes (potassium, chloride and carbon-di-oxide) measured periodically.

Diabetics: Lactulose syrup contains galactose (< 1.6 g/15 ml) and lactose (< 1.2 g/ 15 ml). Use with caution in these individuals.

Concomitant Laxative Use: Do not use other laxatives, especially during initial phase of therapy for portal-systemic encephalopathy; the resulting loose stools may falsely suggest adequate Lactulose dosage.

Use in Pregnancy & Lactation

Pregnancy Category B. Safety of Lactulose during pregnancy and its effect on fetus or mother have not been evaluated in humans.

Use only when clearly needed and when potential benefits outweigh the potential risks to the mother and fetus.

Lactation. It is not known whether Lactulose is excreted in breast milk. Exercise caution when administering Lactulose to a nursing mother.

Interactions with other drugs or Food

Neomycin and other anti-infectives: Reports conflict about concomitant use of Lactulose. The elimination of certain colonic bacteria may interfere with the desired degradation of Lactulose and prevent the acidification of colonic contents. Monitor the patient if concomitant oral anti-infectives are given.

Antacids: Non-absorbable antacids given concurrently with Lactulose may inhibit the desired Lactulose induced drop in colonic pH.

Carcinogenesis, Mutagenesis, Impairment of Fertility

There are no known human data on long – term potential for carcinogenicity, mutagenicity and impairment of fertility. There are no known animal data on long-term potential for mutagenicity. Administration of Lactulose Solution in the diet of mice for 18 months in concentrations of 3 and 10 per cent (v/w) did not produce any evidence of carcinogenicity.

In studies in mice, rats and rabbits, doses of lactulose solution up to 6 or 12 ml/kg/ day produced no deleterious effects in breeding, conception, or parturition.

Adverse Reactions

Precise frequency data are not available. Initial dosing may produce flatulence and intestinal cramps, which are usually transient. Excessive dosage can lead to diarrhoea with potential complications such as loss of fluids, hypokalemia and hypernatremia. Nausea and vomiting have been reported.

Overdosage

Signs and Symptoms: There have been no reports of accidental overdosage. In the event of overdosage, it is expected that diarrhoea and abdominal cramps would be major symptoms. Medication should be terminated.

Oral LD_{50}: The acute oral LD_{50} of the drug is 48.8 ml/kg in mice and greater than 30 ml/kg in rats

Dialysis: Dialysis data are not available for Lactulose. Its molecular similarity to Sucrose, however, would suggest that it should be dialyzable.

Warning

A theoretical hazard may exist for patients being treated with Lactulose Solution who may be required to undergo electrocautery procedures during proctoscopy or colonoscopy. Accumulation of H_2 gas in significant concentration in the presence of an electrical spark may result in an explosive reaction. Although this complication has not been reported with lactulose, patients on lactulose therapy undergoing such procedures should have a thorough bowel cleansing with a non-fermentable solution.
Insuffulation of CO_2 as an additional safeguard may be pursued but is considered to be a redundant measure.

Storage :

Store at or below 30°C. Do not freeze.

Under recommended storage conditions, a normal darkening of colour may occur. Such darkening is characteristic of sugar solutions and does not affect therapeutic action.

Presentation

Bottles : 100 ml and 200 ml with measuring cups.

Replace the cap tightly after use.

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