DATA SHEET

1 PRODUCT NAME

Calcium Resonium powder 1.7 mEq/g.

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Calcium Resonium contains 99.93% calcium polystyrene sulfonate ground and flavoured to a buff coloured fine powder with a vanilla odour and sweet taste. The sodium content of Calcium Resonium is less than 1 mg/g. Calcium content is about 8% w/w (1.6-2.4 mmol/g).

For the full list of excipients, see section 6.1 List of excipients.

3 PHARMACEUTICAL FORM

Powder 300g.

4 CLINICAL PARTICULARS

4.1 THERAPEUTIC INDICATIONS

Calcium Resonium is an ion-exchange resin. It is recommended for the treatment of hyperkalaemia associated with anuria and severe oliguria.

It is also used to treat hyperkalaemia in patients requiring dialysis and in patients on regular haemodialysis or on prolonged peritoneal dialysis.

4.2 DOSE AND METHOD OF ADMINISTRATION

Calcium Resonium is for oral or rectal administration only. The dosage recommendations detailed below are a guide only; the precise requirements should be determined on the basis of regular clinical and serum electrolyte monitoring.

Adults, including the elderly

Oral

Usual dose 15 g three or four times a day. The resin is given by mouth as a suspension in a small amount of water (3-4 mL per gram of resin), or it may be mixed with some sweetened vehicle (but not fruit juices, which contain potassium).

Administer at least 3 hours before or 3 hours after other oral medications. For patients with gastroparesis, a 6-hour separation should be considered (see Section 4.4 and Section 4.5).

Rectal

In cases where vomiting or upper gastrointestinal problems, including paralytic ileus, may make oral administration difficult, the resin may be given rectally in a suspension of 30 g resin in 150 mL water or 10% dextrose in water, given as a daily retention enema. In the initial stages, administration by this route as well as orally may help to achieve a more rapid lowering of the serum potassium level.

The enema should if possible be retained for at least nine hours, following which the colon should be irrigated to remove the resin. If both routes are used at first, it is probably unnecessary to continue rectal administration once the oral resin has reached the rectum.

Paediatric population

Oral

Lower doses should be used, as a guide, 1 mmol potassium per gram of resin. The initial dose is 1 g/kg body weight daily in divided doses, in acute hyperkalaemia. For maintenance therapy dosage may be reduced to 0.5 g/kg body weight daily in divided doses.

The resin is given orally, preferably with a drink (not a fruit juice because of the high potassium content) or a little jam or honey.

Rectal

When the resin cannot be given by mouth, it may be given rectally using a dose at least as great as that which would have been given orally, diluted in the same ratio as described for adults. Following retention of the enema, the colon should be irrigated to ensure adequate removal of the resin.

Neonates

Calcium Resonium should not be given by the oral route, only rectal administration should be considered. With rectal administration, the minimum effective dosage within the range 0.5 g/kg

to 1 g/kg should be employed, diluted as for adults and with adequate irrigation to ensure recovery of the resin.

4.3 CONTRAINDICATIONS

History of hypersensitivity to polystyrene sulfonate resins or to any of the excipients listed in section 6.1.

Serum potassium levels less than 5 mmol/L

Conditions associated with hypercalcaemia (e.g. hyperparathyroidism, multiple myeloma, sarcoidosis or metastatic carcinoma).

Obstructive bowel disease

Calcium Resonium should not be administered orally to neonates and is contraindicated in neonates with reduced gut motility (e.g. post-operatively or drug induced)

4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE

The possibility of severe potassium depletion should be considered and adequate clinical and biochemical control is essential during treatment especially in patients on digoxin. Administration of the resin should be stopped when the serum potassium falls to 5 mmol/litre.

Like all cation-exchange resins, Calcium Resonium is not totally selective for potassium in its actions. Serum calcium levels should be estimated at weekly intervals to detect the early development of hypercalcaemia, and the dose of resin adjusted to levels at which hypercalcaemia and hypokalaemia are prevented. Hypomagnesaemia may also occur and serum magnesium levels should be monitored. Patients should be monitored for all applicable electrolyte disturbances.

In the event of clinically significant constipation, treatment should be discontinued until normal bowel movement has resumed. Magnesium containing laxatives should not be used (see section 4.5).

With oral administration, care should be taken to avoid aspiration, which may lead to bronchopulmonary complications.

Gastrointestinal stenosis, intestinal ischaemia and its complications (necrosis and perforation) may occur in patients treated with polystyrene sulfonate, especially in patients using sorbitol. Therefore, concomitant use of sorbitol with calcium polystyrene sulfonate is not recommended (see section 4.5 and section 4.8).

Since effective lowering of serum potassium with Calcium Resonium may take hours to days, treatment with this drug alone may be insufficient to rapidly correct severe hyperkalaemia, often associated with states of rapid tissue breakdown e.g. burns or trauma. In such instances, some form of dialysis may be imperative. If hyperkalaemia is so marked as to constitute a medical emergency, immediate treatment with intravenous glucose and insulin or intravenous sodium

bicarbonate may be necessary as a temporary measure to lower serum potassium while other long-term potassium lowering therapy is being prepared.

Binding to other orally administered medications

Calcium Resonium may bind to orally administered medications, which could decrease their gastrointestinal absorption and efficacy. Avoid co-administration of Calcium Resonium with other orally administered medications. Administer Calcium Resonium at least 3 hours before or 3 hours after other oral medications. For patients with gastroparesis, a 6-hour separation should be considered (see Section 4.2 and Section 4.5).

Paediatric use

In neonates, Calcium Resonium should not be given by the oral route.

In children and neonates particular care should be observed with rectal administration, as excessive dosage or inadequate dilution could result in impaction of the resin.

Due to the risk of digestive haemorrhage or colic necrosis, particular care should be observed in premature infants or low birth weight infants.

4.5 INTERACTION WITH OTHER MEDICINES AND OTHER FORMS OF INTERACTION

Concomitant use not recommended

Calcium Resonium has the potential to bind to other orally administered medications. Binding of Calcium Resonium to other oral medications could cause a decrease in their gastrointestinal absorption and efficacy. Dosing separation of Calcium Resonium from other orally administered medications is recommended (see Section 4.2 and Section 4.4).

Concomitant use of sorbitol with calcium polystyrene sulfonate is not recommended due to cases of intestinal necrosis, and other serious gastrointestinal adverse reactions, which may be fatal (see section 4.4 and section 4.8).

To be used with caution

Cation donating agents may reduce the potassium binding effectiveness of Calcium Resonium.

Non-absorbable cation containing antacids and laxatives (such as magnesium hydroxide); and concomitant oral use of cation exchange resins has been reported to cause systemic alkalosis.

Aluminium hydroxide: intestinal obstruction due to concretions of aluminium hydroxide has been reported when taken in combination with the resin (sodium form).

Digoxin: the toxic effects of digoxin on the heart, especially ventricular arrhythmias and AV nodal depression/dissociation, are likely to be exaggerated if hypokalaemia and/or hypercalcaemia develop.

Lithium: Possible decrease of lithium absorption.

Thyroxine: Possible decrease of thyroxine absorption.

4.6 FERTILITY, PREGNANCY AND LACTATION

Fertility

No data are available.

Pregnancy

Category B2.

No data are available regarding the use of polystyrene sulfonate resins in pregnancy. The administration of Calcium Resonium in pregnancy is not advised unless the potential benefits outweigh any potential risks.

Use in lactation

No data are available regarding the use of polystyrene sulfonate resins in lactation. The administration of Calcium Resonium during breast-feeding therefore, is not advised unless the potential benefits outweigh any potential risks.

4.7 EFFECTS ON ABILITY TO DRIVE AND USE MACHINES

There are no specific warnings.

4.8 UNDESIRABLE EFFECTS

Metabolism and nutrition disorders

In accordance with its pharmacological actions, the resin may give rise to calcium retention, hypokalaemia and hypocalcaemia and their related clinical manifestations (see section 4.4). Cases of hypomagnesemia have been reported.

Hypercalcaemia has been reported in well-dialysed patients receiving calcium resin, and occasionally in patients with chronic renal failure. Many patients in chronic renal failure have low serum calcium and high serum phosphate, but some, who cannot be screened out beforehand, show a sudden rise in serum calcium to high levels after therapy. The risk emphasises the need

for adequate biochemical control.

Respiratory, thoracic and mediastinal disorders

Some cases of acute bronchitis and/or bronchopneumonia associated with inhalation of particles of calcium polystyrene sulfonate have been described

Gastrointestinal disorders

Gastric irritation, anorexia, nausea, vomiting, constipation and occasionally diarrhoea may also occur. Faecal impaction following rectal administration has been reported, particularly in children, and gastro-intestinal concretions (bezoars) following oral administration have been reported. Gastrointestinal stenosis and intestinal obstruction have also been reported, possibly due to coexisting pathology, excessive dosage or inadequate dilution of the resin.

Gastrointestinal ischemia, ischemic colitis, gastrointestinal tract ulceration or necrosis which could lead to intestinal perforation have been reported following administration of calcium polystyrene sulfonate, which is sometimes fatal (see also section 4.4).

The majority of cases has been reported with concomitant use of sorbitol (see section 4.5 and section 4.4).

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicine is important. It allows continued monitoring of the benefit/risk balance of the medicine. Healthcare professionals are asked to report any suspected adverse reactions https://nzphvc.otago.ac.nz/reporting/.

4.9 OVERDOSE

Hypokalaemia may manifest clinically by signs of irritability, confusion, delayed thought processes, severe muscle weakness, hyporeflexia or paralysis. ECG abnormalities may be evident and cardiac arrhythmias may occur. Consideration should be given to accelerated elimination of the resin, particularly if intestinal motility is reduced. In the event of overdosage appropriate measures should be taken to correct serum electrolytes (restore serum potassium levels to normal, and reduce blood calcium levels if these are raised) and the resin should be removed from the alimentary tract by appropriate use of laxatives or enemas.

For advice on the management of overdose, contact the National Poisons Information Centre on 0800 POISON or 0800 764 766.

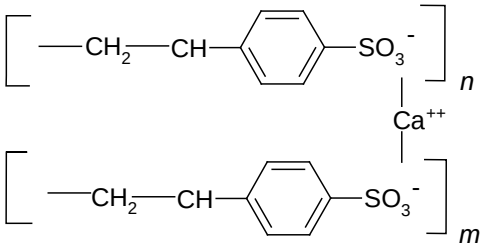
5 PHARMACOLOGICAL PROPERTIES

5.1 PHARMACODYNAMIC PROPERTIES

Pharmacotherapeutic group: Drugs for treatment of hyperkalemia and hyperphosphatemia, ATC code: V03AE01

Calcium polystyrene sulfonate is a cation exchange resin prepared in the calcium phase.

Chemical structure:



CAS Registry Number

37286-92-3

Mechanism of action

Each gram of resin has a theoretical *in vitro* exchange capacity of about 1.3 to 2 millimoles of potassium. However, *in vivo*, the actual amount of potassium bound will be less than this. The resin is insoluble in water.

5.2 PHARMACOKINETIC PROPERTIES

Absorption

Calcium polystyrene sulfonate is not absorbed from the gastrointestinal tract.

Distribution

Calcium polystyrene sulfonate removes potassium from the body by exchanging it within the gut for calcium.

Elimination

For the most part, this action occurs in the large intestine, which excretes potassium to a greater degree than does the small intestine.

The efficiency of potassium exchange is unpredictable and variable. The resin is not selective for potassium.

5.3 PRECLINICAL SAFETY DATA

No data available.

6 PHARMACEUTICAL PARTICULARS

6.1 LIST OF EXCIPIENTS

Saccharin sodium, vanillin.

6.2 INCOMPATIBILITIES

Not applicable.

6.3 SHELF LIFE

3 years.

Suspensions of the resin should be freshly prepared and not stored beyond 24 hours. Once reconstituted, Calcium Resonium is a cream to light brown coloured suspension in which small white particulates may remain visible.

6.4 SPECIAL PRECAUTIONS FOR STORAGE

Store at or below 30°C.

For storage conditions of the resin suspension, see Section 6.3.

6.5 NATURE AND CONTENTS OF CONTAINER

HDPE containers of 300 g each containing a plastic scoop which, when filled level, contains approximately 15 g.

6.6 SPECIAL PRECAUTIONS FOR DISPOSAL AND OTHER HANDLING

Any unused medicine or waste should be disposed in accordance with local requirements.

See Section 4.4 for information on binding to other orally administered medications.

For instructions on the administration of the product, see Section 4.2.

7 MEDICINE SCHEDULE

Prescription Medicine

8 SPONSOR

sanofi-aventis new zealand limited
Level 8, 56 Cawley Street
Ellerslie
Auckland
New Zealand

New Zealand Free Call: 0800 283 684

Email: medinfo.australia@sanofi.com

9 DATE OF FIRST APPROVAL

26 April 1979

10 DATE OF REVISION OF THE TEXT

28 March 2018

SUMMARY OF CHANGES

Section Changed	Summary of New Information
All	Movement of text and update to headings to align with the revised DS format
4.2, 4.4, 4.5	Added information on dosing separation from other orally administered medications
4.8	Updated information on gastrointestinal disorders
4.9	Updated information on overdose