Summary of Product Characteristics

1 NAME OF THE MEDICINAL PRODUCT

Calcium Resonium 99.934 % Powder for oral or rectal suspension

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Calcium polystyrene sulphonate 99.934 % w/w

For a full list of excipients, see section 6.1

3 PHARMACEUTICAL FORM

Powder for oral or rectal suspension.

A buff-coloured, fine powder for oral or rectal suspension.

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Calcium Resonium is an ion-exchange resin that is recommended for the treatment of hyperkalaemia associated with anuria or severe oliguria. It is also used to treat hyperkalaemia in patients requiring acute dialysis and in patients on regular haemodialysis or on prolonged peritoneal dialysis.

4.2 Posology and method of administration

Posology
The dosage recommendations detailed below are a guide only; the precise requirements should be decided on the basis of regular serum electrolyte determinations.

Adults, including the elderly
Oral:
The usual dose is 15g, 3 to 4 times a day. The resin is given by mouth in a little water, or it may be made into a paste with some sweetened vehicle.

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 considered1 (see Section 4.4 and Section 4.5).

Rectal:
In cases where vomiting may make oral administration difficult, the resin may be given rectally as a suspension of 30g resin in 100ml 2% methylcellulose 450 BP (medium viscosity) and 100ml of water, 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, then the colon should be irrigated to remove the resin. If both routes are used initially it is probably unnecessary to continue rectal administration once the oral resin reached the rectum.

Paediatric population
Oral:
1g/kg body weight daily in divided doses in acute hyperkalaemia. Dosage may be reduced to 0.5g/kg body weight daily in divided doses for maintenance therapy.

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

Rectal:

When refused by mouth it should 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. With rectal administration, the minimum effective dosage within the range 0.5g/kg to 1g/kg should be employed, diluted as for adults and with adequate irrigation to ensure recovery of the resin.

Method of administration
Calcium Resonium is for oral or rectal administration only.

4.3 Contraindications

- In patients with plasma potassium levels below 5mmol/L.
- Conditions associated with hypercalcaemia (e.g. hyperparathyroidism, multiple myeloma, sarcoidosis or metastatic carcinoma).
- History of hypersensitivity to polystyrene sulphonate resins.
- Obstructive bowel disease.
- Calcium Resonium should not be administered **orally** to neonates and is contraindicated in neonates with reduced gut motility (post-operatively or drug-induced).
- Hypersensitivity to the active substance or to any of the excipients listed in section 6.1.

4.4 Special warnings and precautions for use

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).

Gastrointestinal stenosis and ischemia: Gastrointestinal stenosis, intestinal ischemia and its complications (necrosis and perforation), some of them fatal, were reported in patients treated with polystyrene sulfonate alone or in combination with sorbitol.

Risk factors for gastrointestinal adverse events were present in many of the cases including gut reduced motility (post-surgery or drug induced) prematurity, history of intestinal disease or surgery, and renal insufficiency and failure. Concomitant use of sorbitol with calcium polystyrene sulfonate is not recommended (see section 4.5).

Patients should be advised to seek prompt medical advice in case of newly developed severe abdominal pain, nausea and vomiting, stomach distension and rectal bleeding.

Lesions seen in polystyrene sulfonate-induced gastrointestinal damage may overlap with those seen in inflammatory bowel disease, ischemic colitis, infectious colitis, and microscopic colitis.

Severe gastrointestinal disorders: Due to the risk of severe gastrointestinal disorders (such as bowel obstruction, ischaemia, necrosis or perforation) the use of polystyrene sulfonate is not recommended in patients with compromised gastrointestinal motility (including immediate post-surgery or drug-induced).

Hypokalaemia: The possibility of severe potassium depletion should be considered and adequate clinical and biochemical control is essential during treatment, especially in patients on digitalis. Therapy should be discontinued as soon as serum potassium falls below 5 mEq/l. (see 4.5 Interactions).

Other electrolyte disturbances: Like all cation-exchange resins, calcium polystyrene sulphonate is not totally selective for potassium. Hypomagnesaemia and/or hypercalcaemia may occur. Accordingly, patients should be monitored for all applicable electrolyte disturbances. 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.

In acute hyperkalaemia not due to the administration of excess potassium the intravenous infusion of glucose together with the administration of soluble insulin is recommended in addition to commencement of therapy with this product.

Other risks: 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 Interactions).

The patient should be positioned carefully when ingesting the resin, to avoid aspiration, which may lead to bronchopulmonary complications.

This product is unsuitable for use where a rapid lowering of serum potassium is required.

Children and neonates: In neonates, calcium polystyrene sulphonate should not be given by the oral route. In children and neonates, particular care is needed with rectal administration as excessive dosage or inadequate dilution could result in impaction of the resin.

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

Sodium: This medicinal product contains less than 1 mmol sodium (23 mg) per 15g powder, that is to say essentially 'sodium free'.

4.5 Interaction with other medicinal products and other forms of interaction

Concomitant use not recommended

Orally administered medications: Calcium Resonium has the potential to bind to other orally administered medications. Binding of Calcium Resonium to other oral medications could cause 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).

Sorbitol (oral or rectal): Concomitant use of sorbitol with calcium polystyrene sulphonate is not recommended due to cases of intestinal necrosis and other serious gastrointestinal adverse reactions, which may be fatal. (see sections 4.4 Special warnings and special precautions for use and 4.8 Undesirable effects)

To be used with caution

- Cation-donating agents: may reduce the potassium binding effectiveness of Calcium Resonium.
- Non-absorbable cation-donating antacids and laxatives: There have been reports of systemic alkalosis following concurrent administration of cation-exchange resins and non-absorbable cation-donating antacids and laxatives such as magnesium hydroxide and aluminium carbonate.
- Aluminium hydroxide: Intestinal obstruction due to concretions of aluminium hydroxide has been reported when aluminium hydroxide has been combined with the resin (sodium form).
- Digitalic drugs: The toxic effects of digitalis on the heart, especially various ventricular arrhythmias and A-V nodal dissociation, are likely to be exaggerated if hypokalaemia and/or hypercalcaemia are allowed to develop. (see 4.4 Special warnings and special precautions for use).
- Lithium: Possible decrease of lithium absorption.
- Thyroxine: Possible decrease of thyroxine absorption.
- Fat-soluble vitamins: Adsorption of these vitamins may be inhibited.

4.6 Fertility, pregnancy and lactation

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

4.7 Effects on ability to drive and use machines

None stated.

4.8 Undesirable effects

Metabolism and Nutrition disorders
In accordance with its pharmacological actions, the resin may give rise to hypokalaemia and hypercalcaemia and their related clinical manifestations (see Warnings and Precautions and Overdosage). 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.

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

Gastrointestinal ischemia, ischemic colitis, gastro-intestinal tract ulceration or necrosis which could lead to intestinal perforation have been reported which is sometime fatal.

Respiratory, thoracic and medicinal disorders
Some cases of acute bronchitis and/or bronchopneumonia associated with inhalation of particles of calcium polystyrene sulphonate, have been described.

Reporting of suspected adverse reactions
Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via HPRA Pharmacovigilance. Website: www.hpra.ie.

4.9 Overdose

Biochemical disturbances from overdosage may give rise to clinical signs of symptoms of hypokalaemia, including irritability, confusion, delayed thought processes, muscle weakness, hyporeflexia and eventual paralysis. Apnoea may be a serious consequence of this progression. Electrocardiographic changes may be consistent with hypokalaemia or hypercalcaemia; cardiac arrhythmia may occur. Appropriate measures should be taken to correct serum electrolytes and the resin should be removed from the alimentary tract by appropriate use of laxatives or enemas.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Ion-exchange resin.

5.2 Pharmacokinetic properties

Not applicable as this product is not absorbed.

5.3 Preclinical safety data

There are no preclinical data of relevance to the prescriber which are additional to that already included in other sections of the SPC.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Saccharin (E954)
Vanillin

6.2 Incompatibilities

This product must not be mixed with other medicinal products except those listed in section 4.2

6.3 Shelf life

Unopened: 4 Years.
Once diluted: Use immediately, any unused portion should be discarded.

6.4 Special precautions for storage

Keep the tub tightly closed, in order to protect from moisture.

6.5 Nature and contents of container

Highly density polyethylene (HDPE) container of 300 g with a low density polyethylene (LDPE) closure. A 15 g plastic spoon accompanies the product.

6.6 Special precautions for disposal of a used medicinal product or waste materials derived from such medicinal product and other handling of the product

No special requirements.

7 MARKETING AUTHORISATION HOLDER

Sanofi-Aventis Ireland Limited T/A SANOFI
Citywest Business Campus
Dublin 24
Ireland

8 MARKETING AUTHORISATION NUMBER

PA0540/141/001

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 1st April 1983

Date of last renewal: 1st April 2008

10 DATE OF REVISION OF THE TEXT

December 2023