

H) Resins

Bile acid binding resins, also known as bile acid sequestrants or simply as 'resins', are a class of cholesterol lowering agents. They have been in existence for over thirty years and are unique in that they are not absorbed into the body.

When are resins used?

Resins are prescribed in cases of hyperlipidaemia when only cholesterol is elevated. In cases where triglyceride levels are also high, resins are inappropriate, owing to their tendency to raise triglycerides further.

Resins are effective in lowering LDL cholesterol (low density lipoprotein - the 'bad' kind), and may slightly raise HDL cholesterol (high density lipoprotein - the 'good' kind). They can be used in combination with other drugs, such as statins. This has proven to be a safe and effective method of reducing cholesterol levels.

How do they work?

Bile acids are made from cholesterol in the liver and are stored in the gall bladder. After a meal, bile acids are released into the upper part of the gut to aid the absorption of dietary fat. Ninety five to ninety nine percent of these bile acids are reabsorbed from the intestine and re-used by the liver.

Resins exert their effect in the intestine. The bile acids bind to the resin and are subsequently lost in the faeces, as opposed to being recycled to the liver. If less bile acids are returned to the liver, it must compensate by making new bile acids. It does this by creating new receptors that draw cholesterol from the bloodstream into the liver for the manufacturing process. The resultant effect is a reduction in blood cholesterol levels.



Types of resins available

The two main brands of bile acid binding resins on the market are cholestyramine (Questran) and colestipol (Colestid). Those who have been prescribed a resin may wish to try both types to determine if one is preferable.

Resins come in powdered form in sachets and must be shaken vigorously with liquid in order to dissolve. Various attempts have been made to disguise the taste, which is not particularly inviting. Orange flavouring and artificial sweetener have been used as well as recipes that incorporate the product.

Considerations when taking a resin

Resins have a well-established safety record. Side effects, however, may be experienced. These include flatulence, abdominal discomfort and in some cases diarrhoea or constipation.

These factors combined with the unpalatability of the drug make compliance difficult for some people. Another consideration is that a relatively large quantity must be taken to achieve the desired effect.

It should be noted that cholestyramine and colestipol might interfere with absorption of other medications. It is recommended that other drugs be taken at least one hour before or four to six hours after a resin. Those individuals taking the drug warfarin should be cautioned that resins interfere with its absorption, which may lead to complications.

Suitability for use in children

Resins are considered safe for use in children. Similar evidence of safety is not available for statin drugs in children. Resins have particular application for children who have the inherited disorder familial hypercholesterolaemia. As resins can interfere with absorption of certain vitamins, supplemental folic acid is recommended. This should be taken at least one hour before or four hours after the resin.

Further consideration

It is likely that resins will continue to have a place in the management of certain blood lipid disorders. There are similar products currently being developed which may be available on the market in the future. These may prove to be more palatable and therefore more acceptable to users.

It is important to remember that diet is central to the treatment of hyperlipidaemia. Lipid-lowering drugs are generally only prescribed when treatment goals are not met through dietary change alone. For those who do require drug therapy, following a pattern of healthy eating is strongly encouraged.

Source: Wray R. Resins. The Family Heart Digest 1997; 51:9.



Recipes with resins

The following are a few ideas for improving the flavour of resins. General tips include dissolving sachet contents in fizzy drinks, fruit juice or whizzed in the blender with any number of accompaniments. The recipes below call for Questran but other brands could be substituted.

Hot Lemon

Use lemon squash or other fruit cordial. Add hot water to make one cup, then add one Questran sachet and stir thoroughly.

Ginger Special

- 10 ml orange juice or lime juice
- 2 sachets of Questran
- Ice cubes, if required

Sprinkle Questran into juice and stir thoroughly until evenly dispersed. Add ginger ale. Stir.

Caribbean Yoghurt Breakfast

- 2 x 150 g cartons low fat natural or fruit yoghurt
- 1 pinch cinnamon
- 1 tbsp. sultanas
- 1 grapefruit (segmented)
- 1 tbsp. muesli
- 1 sachet Questran

Mix all ingredients, except Questran. Divide into two servings and add the resin to one portion, stirring thoroughly. This recipe can be used with many other fruits - fresh orange, apple, melon, banana or pineapple.

Recipes taken from: Ball M, Mann J. Lipids and Heart Disease, A Practical Approach, Oxford: Oxford University Press, 1994. Printed by permission of Oxford University Press