

PROBIOTICS

Use

Probiotics can be used to restore a healthy balance of bowel micro-organisms in children troubled by diarrhoea. They have also been used, experimentally, to reduce the risk of necrotising enterocolitis (NEC) by encouraging the bowel of the preterm baby to become colonised by a less pathogenic bacteria.

Microbiological issues

Interest in the use of lactic-acid-producing bacteria to retain or restore a healthy balance of micro-organisms in the gut has grown steadily in the last 20 years, and commercially available live cultures of these organisms are now often called 'probiotics'. *Lactobacillus bulgaricus*, which occurs in naturally soured milk, was the first organism to be widely studied, but this does not grow well in the human gut, and various other lactobacilli including *L acidophilus*, a normal inhabitant of the gut, and *L casei* are now more commonly used. Other organisms studies include *Saccaromyces boulardi*, *Streptococcus thermophilus* and various *Bifidobacterium* species. Early studies focused of the ability of these microbial supplements to re-establish a more normal bowel flora in children suffering for serious diarrhoea, and other studies looked to see if use could enhance growth in early infancy. Studies in the last ten years have now, more importantly, looked to see whether early prophylactic use can minimise the risk of excessive and unbalanced early colonisation of the gut by other potentially pathogenic organisms in the vulnerable preterm baby. One trial has suggested that the probiotic *L fermentum* may reduce disease severity in young infants with severe atopic dermatitis.

Sustained close contact with the mother helps the normal baby acquire a balance of healthy gut bacteria at birth, as can breast feeding. The gut of the unfed, antibiotic treated, preterm baby is, in contrast, at high risk of being colonised by potential pathogens, and this may be one of the prime factors that renders the baby vulnerable to NEC – a condition in which the gut wall can perforate, causing toxic peritonitis and septicaemia, after it is invaded and killed by pathogenic gas-forming organisms. Reduced gut blood flow in the period immediately before and after birth (which is particularly common in the light-for-dates baby), puts the baby at even greater risk. Serious NEC currently occurs in about 7% of babies born more than 12 weeks early, and is one of the commonest causes of death in those who manage to surmount the respiratory problems seen in the first week of life. Even in survivors the need for surgery, and for further respiratory support, can have a serious impact on subsequent growth and development, especially if surgery involved the removal of a significant length of gut. The use of breast milk seems to reduce the risk of NEC. So, too, can prophylaxis with an oral antibiotic (as outlined in the monograph on gentamicin), but this strategy is seldom used at present because of continuing concern that such treatment could encourage the proliferation of multiply-resistant organisms. Hope is rising that probiotic priming, and the more consistent use of breast milk, could greatly reduce the current scourge of NEC. Whether selective oral antibiotic prophylaxis could further enhance these two strategies is not yet known.

Prophylactic neonatal use

Treatment is still experimental, and the optimum product, and the optimum length of treatment, have yet to be determined. A 125 mg/kg dose of Infloran[®] (a mixture of *L acidophilus* and *B infantis*) was given twice a day from the time breast milk feeds were first introduced until discharge in the largest trial reported to date. Whether prophylaxis needs to be continued as long as this, once the baby is growing well and no longer needs antibiotic treatment, is not yet known. Most clinicians believe that probiotics should only be given to babies at present in the context of a formal controlled trial until some of these issues are resolved.

Supply and administration

Infloran is imported into UK from Austria by IDIS World Medicines. Twenty 250mg sachets (which should be stored at 4°C) cost £14. Mix half the content of one capsule with milk immediately before it is given.

References

See also the relevant Cochrane reviews ©

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