BIOSCREEN

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Specialist Testing Laboratory

11 September 2013

Dear Dr Reynolds, Frank

Ref: Emin, Toni Anne Thank you for referring your patient to Bioscreen-Medical.

Faecal Microbiology Summary Report

Laboratory Receipt Date: 22/08/2013

The following is a summary and comments of the faecal microbial flora from the sample received on this particular date.

Faecal Aerobes

Streptococcus sp.: Overgrowth
Total Aerobic Flora: Overgrowth
E.Coli: Undergrowth

Comments

E. coli

- The reason for the low E.coli percentage distribution/ total count in the sample is unclear. However, recent exposure to antipyretics and/or analgesia (eg. paracetamol) may cause a marked change in the faecal ecology resulting in a significant alteration of the E.coli viable count (Bioscreen data, 2001). Recent supplementation with fructo-oligosaccharide (FOS) may also have suppressed growth of this organism.
- E.coli is an important intestinal micro-organism responsible for the synthesis of essential amino acids (eg. trytophan, phenylalanine, tyrosine)[1,2,3] vitamins (folic acid, vit K2)[4,5], and coenzymes (CoQ10)[6] important for cellular metabolism and reproduction. Determination into the levels of these essential amino acids in patients with persistent and chronic low levels of E.coli may be beneficial. Acute depletion of tyrosine and phenylalanine has shown to have selective effect on decision-making in depressive patients[7]. Tyrosine depletion has also shown to have recognition and working memory impairment[8].
- Consider supplementing oral sugars (eg galactose, fucose) to increase the densities of current intestinal coliforms (eg E.coli)[9,10] as opposed to adding a different strain with probiotics. Health professionals can contact Bioscreen for further information.
- Consider checking the folate, vitamin K2, CoQ10 levels and supplement if indicated.
- Consider checking the levels of the following essential amino acids: tryptophan, tyrosine, phenylalanine, and supplement if indicated.

Streptococcus/Enterococcus

- Streptococcus spp. are Gram positive, facultative anaerobic organisms and are classified as homofermenative, producing only lactic acid from glucose catabolism and generally regarded as potent D- and L-lactic acid producers (Bioscreen data).
- Increased distribution of lactic acid bacteria (Streptococcus, Enterococcus sp.) may lower the colonic pH[11] and has been reported to :(1) modify faecal microbial metabolism particularly the Bacteroides and Bifidobacterium spp, resulting in a decreased production of volatile fatty acids[12], and (2) alter intestinal

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epithelial barrier function increasing passive intestinal permeability to small and large molecules. However, this consideration requires further study.

- High colonization of faecal lactic acid bacteria (Streptococcus, Enterococcus sp.) significantly and positively correlate with cognitive dysfunctions (nervousness, memory loss, forgetfulness, confusion, mind going blank)[13,14,15,16], and sleep patterns (Bioscreen data).
- Increased proportion of lactic acid may result in a change in the distribution of the anaerobic microbial flora. This change of the fecal flora may affect the production of primary bile acids and influencing the bile acid composition in both the bile and the intestine[17]. The possibility of fat malabsorption may occur. However, this consideration requires further study.
- If indicated, erythromycin may assist in the suppression of the faecal Streptococcus spp. Ampicillin/amoxycillin may be a suitable alternative if patient is reported to have adverse reactions to the macrolids.

Faecal Anaerobes

Lactobacillus sp.: Overgrowth
Bifidobacterium sp.: Undergrowth
Eubacterium sp. : Undetected

Comments

Bifidobacterium/Lactobacillus sp.

- Members of the genus Lactobacillus are Gram positive bacilli and lactic acid producing bacteria. A few members can grow in a microaerophilic environment; but most are obligate anaerobes.
- High levels of Lactobacillus spp. in the anaerobic microbial flora. Metabolic acidosis and neurological dysfunction (depressed conscious state, confusion, aggressive behaviour, slurred speech and ataxia) have been reported in patients with increased level of lactobacilli in the anaerobic faecal flora[18].
- Cease all oral supplementation of lactic acid probiotics if indicated. If required, consider an antimicrobial agent (eg. ampicillin) to assist in the suppression of the organisms Lactobacillus spp.
- Members of the genus Bifidobacterium are Gram positive branching bacilli and lactic acid producing bacteria. A few members can grow in a microaerophilic environment; but most are obligate anaerobes.
- Consider the oral supplementation of the prebiotics, fructo-oligosaccharide (FOS), to stimulate the growth of Bifidobacterium spp[19,20] (caution if E. coli is low or absent).
- Oral Supplementation of Bifidobacterium probiotics may be beneficial.

Eubacterium

Undetectable Levels of Eubacterium spp.

- Eubacterium sp is member of the intestinal microbial flora of human, and is regarded as one of the most frequently recovered organisms in the gastrointestinal tract, second only to the Bacteroides spp.
- The organism is responsible for the deconjugation of bile acids and the production of butyric acids.

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Faecal Yeasts

Comments

- Candida spp. were recovered and the % abundance was within the normal range.

We trust these comments assist you in the interpretation of Bioscreen reports. If you require further assistance please do not hesitate to contact Bioscreen anytime.

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