PH AND FECAL MICROFLORA OF HEALTHY ADULTS

Pages with reference to book, From 42 To 43

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Abstract

The fecal pH in 100 specimens from healthy adults varied from 4.5 to 7.8 (mean 5.7). Microorganisms isolated were similar to those reported in other series (JPMA: 31:42, 1981).
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Introduction

Studies on the fecal microflora in healthy adults are not clearly indicated and no information is available about variation in fecal pH. Although a considerable amount of literature is present about the pH and indigenous flora in other countries (Madanagopalan et al., 1970; Gall, 1970; Houte and Gibbon, 1966; Bhat et al., 1972; Hill and Drasar, 1975).
Normal intestinal flora may provide a base line to evaluate changes occurring due to pathological conditions (Bornside and Cohn, 1965). A quantitative change in the flora may alone be responsible for certain disease state (Donaldson, 1964).
The purpose of this study was to determine the pH and qualitative and quantitative microbial analysis on the fecal samples obtained from healthy adults.

Material and Method

Fecal specimens from 49 apparently healthy males and 51 females ranging in age from 18-78 years were studied. They were not taking antibiotics or any other drug therapy.

Collection of Feces

The fecal samples were collected in sterile containers and promptly brought to the laboratory for examination.

Determination of pH

The pH of the feces was estimated using a glass electrode pH meter by the surface contact method.

Microbiological Method

The fecal specimen was processed in the following manner. One gram of feces was thoroughly emulsified in 9 ml sterile saline and serial ten fold dilutions were prepared. From appro-priate dilution 0.1 ml samples were spread on the surface of the media and incubated according to the period and temperature of incubation as shown in Table I.

Table I: Selective Media and Methods of Incubation

Organisms	*Medium*	*Dilution (—log 10)*	*Incubation*		
Total anaerobes	Tryptic Soy Agar+5% Human blood	6, 7, 8, 9	Anaerobic	37°C	72 hours
Total aerobes	Blood Agar	6, 7, 8, 9	Aerobic	37°C	48 hours
Coliforms	MacConkey's Agar	6, 7, 8, 9	Aerobic	37°C	48 hours
Enterococci	Azide Blood Agar	5, 6, 7, 8	Aerobic	37°C	48 hours
Veillonella	Veillonella Agar	5, 6, 7, 8	Anaerobic	37°C	48 hours
Aerobic and Anaerobic Lactobacilli	Rogosa S.L. Agar	4, 5, 6, 7	Aerobic and Anaerobic	37°C	72 hours
Staphylococci	Mannitol Salt Agar	1, 2, 3, 4	Aerobic	37°C	72 hours
Candida	Sabouraud Agar	1, 2, 3, 4	Aerobic	28°C	96 hours

Identification Procedures

The colonies were picked up from different media and subcultured to obtain the isolates in pure culture. Gram staining of all isolates was routinely done. Coliforms, Enterococci, Veillon-ella, Lactobacilli, Staphylococci and Candida were recognized by their colonial characteristics on the selective media and when required coa-gulase test and reaction on TSI and Simmon Citrate medium were performed. Other biochemi- cal tests were also performed. The chalmydospore formation on corn meal agar was done for identification of Candida species.

Result

Fecal pH ranged mostly between 5-6.9. The pH of only a few samples was above or below this range and none had a pH 8 or above.

The distribution of fecal bacterial flora in the present study is compared with that of other countries (Table II).

Table II: Comparison of Bacterial Flora of Feces

Organisms	*Present Series*	*Bhat et al* 1972 (*India*)	*Mata et al* 1969 (*U.S.A.*)
Total anaerobes	9.0	—	10.5
Total aerobes	9.0	—	8.8
Coliforms	8.5	7.5	8.7
Enterococci	7.6	8.0	7.9
Veillonella	5.5	5.5	9.2
Anaerobic Lactobacilli	6.6	9.0	9.0
Lactobacilli	5.8	7.5	8.6
Staphylococci	4.2	—	5.0
Candida	3.4	4.0	4.0

The values are expressed as mean-log 10 number of organisms per gram of feces.

Similar types of fecal microorganisms were isolated here and from studies conducted in India and England.

Discussion

The frequency of various types of fecal microorganisms in asymptomatic adults does not indicate any significant variations in various countries as observed from studies of Bhat et al (1972) in India and Drasar et al (1969) in England.
The pH of 100 fecal samples in this study varied from 4.5-7.8 (mean 5.7).
Escherichia coli was the most predominant aerobe followed by Enterococci which was found in 54% of the specimens. A faecalis and Klebsiella were isolated in 8%, Pseudomonas in 3% and Proteus in 2% of cases, S. aureus and S. albus was isolated in 44% of the fecal samples. C albicans was cultured in 48% of the cases, 30% were found to be C albicans.

References

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