

Fermentation of Mucins and Plant Polysaccharides by

Anaerobic Bacteria from the Human Colon

ABIGAIL A. SALYERS,^{1*} SUSAN E. H. WEST,¹ JOHN R. VERCELLOTTI,² AND

TRACY D. WILKINS¹

Anaerobe Laboratory¹ and Department of Biochemistry and Nutrition²

Table 1. *Species of intestinal bacteria* unit (from 7.0 to 6.0) as compared with uninoculated

Table 2. Number of strains of bacterial species from the human colon which ferment monosaccharides and plant polysaccharides

substrate	<i>B. adolescentis</i> (11) ^a	<i>B. breve</i> (5)	<i>B. infantis</i> (11)	<i>B. longum</i> (10)	<i>E. aerofaciens</i> (15)	<i>E. eligens</i> (5)	<i>E. rectale</i> (20)	<i>P. productus</i> (8)	<i>R. albus</i> (5)	<i>R. bromii</i> (8)
monosaccharides										
glucosamine ^c	— ^b	—	—	—	7	—	1	4	—	—
L-fucose ^d	—	3	—	—	—	2	1	6	—	—
lysaccharides										
amylose	7	5	2	—	2	—	—	1	—	6
amylopectin	10	5	9	—	3	—	12	1	—	8
xylan	8	—	8	—	—	—	—	1	—	—
larch arabinogalactan	—	—	—	10	—	—	—	—	—	—
gum guar	1	—	—	—	—	—	—	—	5	—
gum locust bean	1	—	—	—	—	—	—	—	5	—
gum arabic	—	—	—	3	—	—	—	—	—	—
gum ghatti	—	—	—	3	—	—	—	—	—	—
gum tragacanth	—	—	—	6	—	—	—	—	—	—
pectin	—	—	—	—	—	3	—	—	—	—
polygalacturonate	—	—	—	—	—	2	—	—	—	—
laminarin	—	—	—	—	—	—	—	1	—	—

umber of strains tested.

—, substrate not fermented by any of strains tested.

Iso fermented by one of four strains of *B. bifidum*, by 4 of 5 strains of *L. acidophilus*, and by 4 of 5 strains of *E. biforme*.

Iso fermented by all 5 strains of *R. gnarus*, by 10 of 12 strains of anaerobic cocci, and by 1 of 5 strains of *E. biforme*.

all strains of *R. albus* (Table 2). Unlike *R. albus* fermented as wide a range of complex carbohy-

strains from the bovine rumen (5), these *R. albus* strains did not ferment xylan. Human *R.*

strains in their ability to ferment cellulose and ovomucoid, which were fermented by several

of human mucin, such as fucose and hexosa-

mode of action. Adv. Carbohydr. Chem. Biochem.