

quirement for peptides, whereas *Prevotella ruminicola*, which requires peptides for optimal growth, is one of the few rumen bacteria to ferment xylose rapidly.

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Peptide hydrolysis by human colonic bacteria is also a biphasic process carried out by *Bacteroides*-like organisms. N McKain, RJ Wallace (*Rowett Research Institute, Bucksburn, Aberdeen AB21 9SB, UK*)

Peptide breakdown in the rumen occurs via a two-stage process. Firstly, oligopeptides are cleaved by dipeptidyl peptidases and then the resultant di- and tripeptides are metabolised by separate di- and tripeptidases. The latter enzymes are present in several species of bacteria and in protozoa, while dipeptidyl peptidases occur predominantly in bacteria formerly known as *Prevotella ruminicola* and now reclassified as *P. albensis*, *P. brevis*, *P. bryantii* and *P. ruminicola* [1]. The present study was undertaken to determine if a similar pattern occurs in human colonic bacteria. Aminopeptidase activities of mixed faecal suspensions from four human donors and of 14 of the most numerous species of human colonic bacteria were measured using alanine oligopeptides and various dipeptidyl- and amino acyl-arylamidase substrates. The pattern of hy-

drolysis of Ala₄ and Ala₅ in faecal suspensions suggested that the main mechanism of peptide hydrolysis was by cleavage of dipeptides. However, a significant quantity of single amino acid cleavage also occurred, which was much greater than that found in the rumen. Dipeptidyl *p*-nitroanilides and 4-methoxynaphthylamides were broken down more rapidly than amino acyl derivatives, consistent with a greater activity of dipeptidyl peptidases. The predominant *Bacteroides* spp. of the intestine, including *B. fragilis*, *B. distasonis*, *B. thetaiotaomicron* and *B. vulgatus*, also had greater dipeptidyl peptidase activity than amino acyl aminopeptidase activity, while *Bifidobacterium*, *Clostridium* and *Enterococcus* spp. had a more variable pattern of peptidase activities. Thus peptide hydrolysis in the human intestine, as in the rumen, appears to be a two-stage process which is initiated by dipeptidyl peptidases present in the most numerous *Bacteroides* spp. Presumably this mechanism confers an advantage to these bacteria, although the nature of that advantage is not yet known.

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Isolation and characterisation of peptidase and peptide permease mutants of *Prevotella albensis*. N Walker, RJ Wallace (*Rowett Research Institute, Bucksburn, Aberdeen AB21 9SB, UK*)

Bacteria in the group formerly known as *Prevotella ruminicola*, now reclassified as *P. albensis*, *P. brevis*, *P. bryantii* and *P. ruminicola* [1], play a significant role in peptide breakdown in the rumen. Specifically, they possess dipeptidyl peptidase activities which are typical of mixed rumen