Cleavage by *Eco*O109 and *Dra*II is inhibited by overlapping *dcm* methylation

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We have recently determined the nucleotide sequence of the *bgl* operon of *E. coli* (1). Sequence analysis revealed the presence of two recognition sites for restriction endonuclease *Eco*O109 and its isoschizomer *Dra*II. Both enzymes recognize and cut the sequence RG'GNCCY (2,3). However, digestion of plasmid pFDX733 (1) containing the entire operon with either enzyme resulted in only linearization (Fig. 1, lanes 1 and 3). We noted that the resistant site overlaps with a *dcm* methylation site (CmCT/AGG) (4). The sequence at this site is GGGCCTGG. When we isolated plasmid pFDX733 from a *Dcm*⁻ host, the DNA was efficiently cut with both enzymes at both positions (Fig. 1, lanes 2 and 4). We conclude that enzymes *Eco*O109 and *Dra*II are sensitive to overlapping *dcm* methylation at their recognition sites.

Fig. 1. Digestion of plasmid pFDX733 with enzymes *Eco*O109 and *Dra*II, respectively. Lanes 1 and 2: *Eco*O109; lanes 3 and 4: *Dra*II. DNA was isolated from a wildtype strain of *E. coli* (lanes 1 and 3) or from the *dcm* mutant strain GM31 (5) (lanes 2 and 4). *Eco*O109 was purchased from Biolabs and *Dra*II from Stehelin (Basel). Both enzymes were used as specified by the manufacturers. Lane 5: DNA size standard (lambda DNA digested with *Hind*III and lambda dv1 DNA digested with *Hae*III).

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