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CONFIRMED NUCLEOTIDE SEQUENCE OF *fanF* OF *ESCHERICHIA COLI* K99 FIMBRIAE

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Enterotoxigenic *Escherichia coli* possessing K99 fimbriae cause diarrhea in newborn calves, piglets and lambs⁹. These fimbriae have been found to bind specifically to N-glycolylneuraminic acid-containing GM₃ ganglioside¹ and to consist of eight different subunits named FanA to FanH³. The nucleotide sequences and functions of these subunits were reported as follows; FanC is a major subunit called fimbrillin which forms the fimbrial structure⁴, FanA and FanB are regulatory proteins which control expression of fimbriae^{5,8}, FanD is platform protein⁷, and FanG and FanH are minor subunits⁶. However, there is no available information about adhesin, which recognizes the host receptor ganglioside.

Recently, the nucleotide sequences of *fanF*, the gene encoding FanF, were reported by two different laboratories^{2,10}, but a great difference was observed between nucleotides 769 and the 3' end of the sequences of *fanF* described by the two laboratories. Thus the resultant size of the open reading frame representing FanF was reported to be 999 bp by Simons *et al.*¹⁰ and 813 bp by Ono *et al.*². Therefore, we confirmed the nucleotide sequence of this region.

pFK99 (pBR322), which contains the entire K99 fimbrial gene cluster (*fanA* to *fanH*)¹¹ was kindly supplied by Dr. F. K. de Graaf, Vrije University, Amsterdam, the Netherlands. The *Bam*HI-*Bam*HI fragment of pFK99 (pBR322), which contains the entire gene cluster, was cloned into pCU19 vector (pFK99 (pUC19)). Then the *Nhe*I-*Nsp*7524I fragment of pFK99 (pUC19), which contains the disputed region, was isolated by agarose gel electrophoresis and inserted into pUC18 cleaved with *Xba*I and *Sph*I. DNA sequences were determined using a SEQUENASE Ver. 2.0 kit (TOYOBO Co. Ltd., Osaka, Japan).

The nucleotide sequence of *fanF* and the corresponding amino acid sequence are shown in Fig. 1. The upstream region from the *Nhe*I restriction site refers to that reported by Ono *et al.*². *fanF* encoded 333 amino acids. This confirmed nucleotide

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sequence was the same as that reported by Simons *et al.*¹⁰⁾.

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