

**Title:**

Menaquinones Content of Human Serum and Feces

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**Abstract:**

Bacterially-synthesized menaquinones (MKn) may contribute to vitamin K (VK) nutriture. There are limited data on interindividual variability in endogenous MK synthesis and its relation to circulating forms of VK. Serum and fecal VK concentrations were assessed in 13 healthy adults (45-65 yr) consuming a standardized diet for 14d. Phylloquinone (PK), MK4 and MK6-MK13 concentrations were measured by HPLC in fasting serum collected on day 8 and 72 hr-fecal homogenates collected days 8-10. LC/MS was used to confirm individual MKn. PK, the primary dietary form, comprised only  $6 \pm 3\%$  of total fecal VK content (fecal PK [mean  $\pm$  SD];  $0.45 \pm 0.17 \mu\text{g/g}$  dry wt), and was not correlated with serum PK concentrations ( $1.85 \pm 0.89 \text{ pmol/L}$ ). No MKn were detected in serum. MK4 and MK6-MK12 were detected in all, and MK13 in 7 fecal homogenates. Mean fecal MKn concentrations ranged from  $0.17 \pm 0.05 \mu\text{g/g}$  dry wt for MK4 to  $4.95 \pm 2.30 \mu\text{g/g}$  dry wt for MK10, with MK10 comprising  $63 \pm 19\%$  of total fecal MKn content. Based on fecal contents, we conclude that the majority of MKn isoprenologues are present in the human colon, but with evidence of interindividual variation despite 10d of diet standardization. The clinical implications of these findings, and the role of MKn in supporting VK nutriture are yet to be determined. Funded by a grant from General Mills and USDA contract #58-1950-7-707.