**Estimation of the oro-caecal transit time using salicyl-azo-sulfapyridine in the preruminant calf: microassay and assessment *in vivo*.** JP Lallès *(INRA, Jeune Ruminant, 65 rue de Saint-Brieuc, 35042 Rennes Cédex, France)*

Various non-invasive methods (scintigraphy, X-ray, lactulose-hydrogen breath test) of measuring the small intestine transit time *(TT)* have been developed in humans but they often require expensive and complex equipment (Kellow *et al,* 1986). An alternative approach to investigating *TT* in the preruminant calf suffering from gut adverse reactions to legume protein is provided by the use of salicyl-azo-sulfapyridine (SASP). This molecule when fed remains intact in the small intestine. It is split by caecal bacteria into 5-amino-salicyclic acid and sulfapyridine (SP). SP is absorbed and can be detected in the blood.

The use of SASP (33 mg/kg) as a transit marker given orally was assessed by comparing its time of first appearance *(TT)* at the ileum to that of phenol red (PR, 4 mg/kg) in calves fitted with reentrant ileal cannulae. Time of appearance of SP (≥ 0.5 μg/ml) in the blood was then compared to PR *TT* in calves equipped with simple ileal cannulae and jugular catheters. PR first emergence was detected visually in ileal digesta. SP was determined colorimetrically (Bratton and Marshall, 1939) after a microassay using an ELISA device. SP was chemically (Bratton and Marshall, 1939) released from SASP in digesta, but free SP was assayed in plasma samples. Data were analyzed by linear regression.

In the microassay, SP absorbance at 504 nm varied linearly between 0 and 470 ($r$ = 0.9997) and 460 mOD ($r$ = 0.9993) for a concentration range of 0–10 μg/ml in water and plasma respectively (accuracy of 1.6 and 2.5%). SASP may be regarded as a suitable marker of small intestine transit when compared to PR, since both substances appeared at the same time in ileal digesta ($TT_{PR}$ = 162 ± 43 min, $TT_{SASP}$ = 1.05 $TT_{PR}$ − 12, $rSD$ = 7, $r$ = 0.99, $P < 0.01$, $n$ = 5). Time of SP appearance in plasma overestimated *TT* of PR in the small intestine by approximately 1 h (34%) ($TT_{PR}$ = 184 min, $TT_{SASP/SP}$ = 0.996 $TT_{PR}$ + 63, $rSD$ = 20, $r$ = 0.93, $P < 0.01$, $n$ = 8). Differences between methods could be ascribed mainly to a delayed hydrolysis of SASP because SP appeared only 40 min after intracaecal administration of SASP. In man, its breakdown seemed to be faster (4 min) (Kellow *et al,* 1986). In conclusion, SASP may be considered as a good transit marker in reference to RP. SP appearance in the blood provided a reliable but overestimated index of small intestinte transit time in the preruminant calf.

*References*

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Kellow JE, Borody TJ, Phillips SF, Haddad AC, Brown ML (1986) *Gastroenterology* 91, 396-400