

Vitamin E concentration in blood plasma of goats fed palm oil leaves

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Oil palm is an important crop grown in Malaysia. The pruned oil palm leaf or frond (OPF) is commonly fed as a roughage to ruminants. It has a low crude protein content (4-8 %) and an estimated Metabolizable Energy (ME) of 4.5 - 5.5 MJ/kg. OPF is also known to contain substantial amounts of vitamin E. Studies by Gapor (1988, JOCS World Congress, 1323-1328) indicated that palm leaves contain 0.14 - 0.28 % vitamin E mainly in the form of (alpha)-tocopherol.

An experiment was carried out to examine the effect of feeding OPF on the level of vitamin E in blood plasma of goats. Nine male Kacang goats weighing 17-18 kg were placed in individual pens and given either one of the following treatments ; Diet A, control (urea treated rice straw + 200 g concentrate) ; Diet B, OPF + 200 g concentrate ; Diet C, (urea treated rice straw + concentrate + 60 mg Vitamin E daily). The concentrate contained 75 % corn and 25 % soya-bean meal. The vitamin E was a commercial preparation commonly added to ruminant rations and was given orally together with the concentrate. Chemical analysis showed that diets contained 3.0, 410 and 61 mg vitamin E per kg dry matter, respectively. The animals were fed the diets for a period of 30 days. Blood samples were taken from the jugular vein at the

commencement of the trial and thereafter every 3 days. Vitamin E in blood plasma and other blood parameters were also determined. Different diets had little or no effect on blood constituents, such as haemoglobin, plasma protein, PCV, MCV, WBC etc... Plasma vitamin E level (ug/ml) (Table) of goats fed oil palm leaves was higher ($P < 0.001$) than those of goats fed Diet A or Diet C. However, plasma Vitamin E levels of goats on Diets A and C were not significantly different but were within the normal range (Ullrey, 1981, J Anim Sci, 53, 1039-1059). Interestingly, animals on Diet A, although receiving a much lower than the required amounts had an almost similar level of plasma vitamin E as those fed Diet C which supplied the required amount of vitamin E (National Research Council, 1987). This suggests that Vitamin E is efficiently absorbed from the gut and not oxidised in the rumen and supports the findings of Hidioglou, Butler and Ivan, (1990, Int J Vit and Nutr Res, 60, 4, 331-337). It is thought that goats are able to maintain the plasma vitamin E even when the intake is low.

It can be concluded that oil palm fronds can be a good source of vitamin E for livestock. Vitamin E from OPF which is mainly in form of (alpha)-tocopherol is efficiently absorbed and maintained high levels in blood plasma.

Day	Diet A	Diet B	Diet C
0	2.23 (0.69)	4.47 (2.15)	1.19 (0.40)
1	3.88 (0.63)	10.52 (11.3)	7.94 (6.4)
3	7.78 (7.3)	11.41 (7.0)	6.28 (1.75)
5	1.36 (0.23)	12.14 (8.73)	3.85 (2.88)
8	4.17 (0.61)	9.75 (4.0)	3.16 (1.63)
11	1.62 (0.61)	10.26 (4.87)	1.92 (1.87)
14	1.66 (0.54)	14.19 (1.97)	2.88 (1.75)
17	2.63 (0.37)	10.55 (8.32)	5.93 (3.57)
30	4.49 (4.2)	13.08 (5.3)	3.12 (0.99)