Table 1 *Mineral content of clays as shown in their labels compared with animal tolerance level (ppm)**

	Mg %	Na %	Fe %	K %	Ca %	Si %	Al %	Zn ppm	Cu ppm	Mn ppm	Cr ppm	Ni ppm	As ppm	Pb ppm	Cd ppm	Hg ppm	Sr ppm
126 FF	2.0	0.5	2.9	2.2	0.9	31.1	*6.7*	64	15	168	39	5	3	6	*0.4*	<.1	165
1200 FF	2.5	0.1	1.1	0.3	1.3	31.7	*7.1*	37	8	120	8	2	6	25	*4.0*	<.1	394
220 FF	3.0	0.7	2.7	2.6	1.5	29.5	*7.1*	67	18	422	52	14	4	6	*0.6*	<.1	355
320 FF	2.9	0.8	2.9	2.6	1.3	29.3	*7.3*	68	15	346	51	14	3	6	*0.6*	0.1	420
Animal tolerance level*						2000	*1000 All*	300 O	25 O	500 O,H,R	1000 All	50 O,B, H, R	50 All	30 All	*0.5 All*	2 All	2000 O, H, R
Recommendation**	S	S	S	S	S	S	*NS*	S	S	S	S	S	S	S	*NS*	S	S

*Maximum tolerable level by the animal species most sensible to such mineral (ppm). O = ovines, B = bovines, H = horses, R = rabbits.
**S = safe, NS = not safe.

have an innate resistance to it. When clays have already been used by the industry, mineral content is reduced, due to the presence of 25% of residual oil. These disposable clays are the byproduct that could be considered for animals feeding purposes. As mentioned previously, the limiting factor for their use, is mostly the high Al content. Therefore restricted consumption by animal species should be estimated, to avoid bioaccumulation. If Al accounts for 5.3% in wasted clays as an average, maximum intake of clays depending on animal tolerance is (g anim^{-1} d^{-1}): 151 in bovines, 19 in sheep, 7 in swine, 0.38 in poultry, 15.1 in horses and 2.3 in rabbits.

Conclusions

The biggest benefit of the use of disposable clays as a feedstuff resides in their amount of Fe and to a lesser extent K, Mg, as well as residual oil. Its high Al content represents the main constraint to their employment. Due to their greater consumption and tolerance to Al, target species to be feed with disposable clays are ruminants, offering bovines no more that 150 g anim^{-1} d^{-1}. This use may help to reduce environmental pollution.

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Effect of dietary plant charcoal from Canarium schweinfurthii Engl. and maize cob on aflatoxin B1 toxicosis in broiler chickens

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Aim

A study was conducted to evaluate the effect of including plant charcoal from Canarium schweinfurthii (charcoal A) and maize cob (charcoal B) in the diet on aflatoxin B1 toxicosis in broiler chickens.

Materials and Methods

Three-weeks-old male chicks (Hybro) were randomly divided into 8 groups of 20 individual birds each individually caged in a completely randomised design. The birds in group 1 received diet C- without aflatoxin B1 and considered as negative control, while the chickens in group 2 were fed with diet C+ (positive control) containing 22.02 ppb of aflatoxin B1 produced in peanut meal by Aspergillus flavus. The chickens in groups 3 to 8 were fed diets containing 22.02 ppb of aflatoxin B1 and supplemented with either 0.20, 0.40, or 0.60% of charcoal A (A0.20, A0.40 and A0.60 respectively) or charcoal B (B0.20, B0.40, and B0.60 respectively).

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Results

The results indicated that feeding 0.20, 0.40 and 0.60% of charcoal A and 0.60% of charcoal B significantly ($P < 0.05$) increased feed consumption as compared with C+. Birds fed 0.20, 0.40 and 0.60% of charcoal A had significantly ($P < 0.05$) higher final body weight as compared with C+. When compared with C+, birds fed 0.40 and 0.60% of charcoal B had significantly ($P < 0.05$) higher body weight, average weight gain and intestine length. Feed conversion ratio, intestine circumference, carcass yield, relative weight of legs, heart and abdominal fat were not affected either by aflatoxin B1 or charcoal. Both charcoal A and B depressed ($P < 0.05$) liver weight and increased intestine density as compared with C+.

Conclusion

It was concluded that 0.20% of Canarium schweinfurthii charcoal and 0.60% of maize charcoal could be used as feed additives to absorb aflatoxin B1 and promote growth performance of broiler chickens.

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Potential for using multinutrient block for supplementing feeding of growing goats

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Aim

The study of the potential for using a multinutrient block for supplementing feeding of growing West African dwarf goats was carried out from August 2003 to January 2004 in the Experimental Farm of the University of Dschang.

Materials and Methods

Eighteen young West African dwarf goats were divided in two groups of nine animals each 6–7 month old and averagely weighing 9.07 ± 1.17 kg were used. The animals of the supplemented group (group 2) received 100 g of multinutrient block per animal per day whereas those of the control group (group 1) did not receive any supplement. The animals were weight every 14 days for the evaluation of growth. The body condition score (BCS) was take at the beginning and at the end of the study. A sample of 100 g of multinutrient block was taken for the chemical composition analysis.

Results

From the results of this study it appears that the multinutrient block had a high percentage of crude proteins (37.43% DM) and ash (29.03% DM). The organic matter (OM) content, the cells wall constituent (NDF), hemicellulose and cellulose were 70.97; 25.03; 12.40 and 5.70% DM respectively. At the end of the study, the average BCS (3.9 ± 0.10) and average weight of the supplemented goats (16.90 ± 2.94 kg) was significantly higher ($P < 0.05$) than that of the control group (2.50 ± 0.12; 12.42 ± 2.50 kg). The total weight gain was 3.30 kg and 7.89 kg corresponding to a daily average weight gain of 23.57 g/d and 56.35 g/d respectively for the animals of group 1 and group 2.

Conclusion

The multinutrient block significantly improves the growth of the young West African dwarf goats.

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