Evaluating the potential of equations to predict Organic matter digestibility from faecal Nitrogen(N) on rations with tropical feeds

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1.Introduction

- Organic matter digestibility (OMD) is primary to evaluate nutritive value of feed consumed,
- Estimating OMD in vivo requires abundant work
- To facilitate this estimation, equations based on the N concentration in faces have been developed.
- Three equations have been developed to predict OMD of ruminants with forage-based diets.
- Potential of equations to predict OMD with tropical feeds is evaluated

2.Hypothesis

- All the equations were developed under specific experimental conditions
- The potential of these equations to accurately predict OMD under other settings might be low

3.Methods

- Three equations chosen from different studies

Wang Eq	$=0.899-0.644\ exp(-0.5774*CP\ (g/kg\ OM)/100))$ *(Wang et al., 2009)*
Peripolli Eq	$=0.7326-0.3598\ exp(-0.9052*\ CP(g/kg\ OM))/100$ *(Peripolli et al.,2011)*
Lukas Eq	$=79.76-107.7e(-0.01515*X)$ *(Lukas et al., 2005)*

- OMD estimated compared with the in vivo OMD measured
- Total 224 in vivo measured OMD in the tropics with cattle, sheep, and goat
- Calculated OMD regressed on the measured OMD and the slope, intercept and R^2 estimated

4.Results

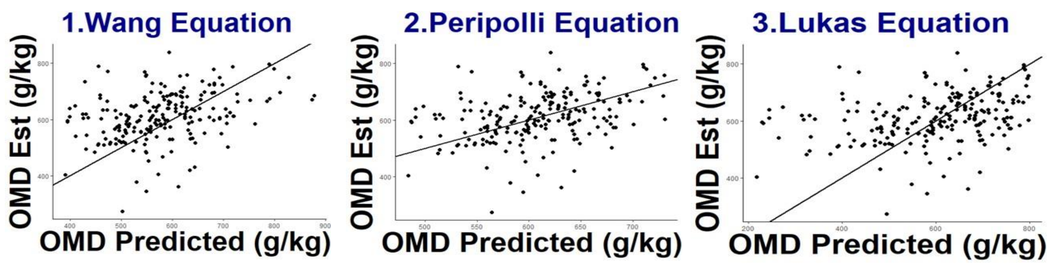

Fig.1,2,& 3 : Calculated OMD regressed with measured OMD

Table 1.Comparison of slope, intercept and R^2 for all the 12 comparisons.

	Slope	Intercept	R Square
Total 224 comparisons			
Eqn.1	0.38	345.9	0.13
Eqn.2	0.23	470.6	0.13
Eqn.3	0.51	284.1	0.12
100% Grass forage			
Eqn.1	0.33	353.9	0.14
Eqn.2	0.24	442.6	0.19
Eqn.3	0.58	200.7	0.16
50% Grass and 50% Legume forage			
Eqn.1	0.33	389.9	0.08
Eqn.2	0.22	546.7	0.04
Eqn.3	0.34	430.9	0.06
100% Legume forage			
Eqn.1	0.52	313.8	0.23
Eqn.2	0.21	505.7	0.13
Eqn.3	0.40	412.8	0.09

- In total of 12 comparisons were conducted
- $R^2 < 0.23$,slope =0.21-0.58 & intercepts =200.7-546.7

5.Conclusion

- Ability of all three equations to predict accurate OMD is very low.
- Equations developed to predict OMD from faecal N cannot be applied in a variety of tropical feeding conditions.

6.Reference

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