

# Evaluating the *in vivo* efficacy of dry chicory (*Cichorium intybus*) roots for growth promotion and faecal egg count reduction in naturally parasitized pigs

I. C. Nwafor<sup>A,B</sup>, J. P. Fourie<sup>A</sup> and H. A. Roberts HA<sup>A</sup>

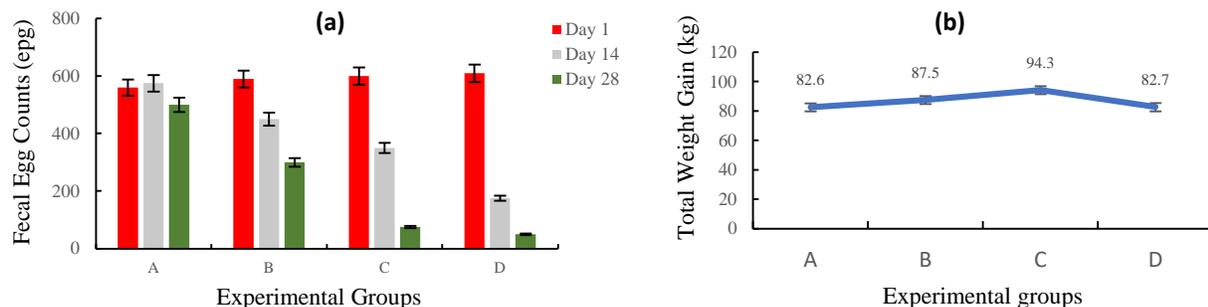
<sup>A</sup>Central University of Technology, Free State, Private Bag X20539, Bloemfontein 9300, South Africa.

<sup>B</sup>Email: [nwaforifeomac@gmail.com](mailto:nwaforifeomac@gmail.com)

Pig farming is considered important in most parts of the world. However, helminthiasis has been reported to be a major setback to profitable pig production in Africa (Jufare *et al.* 2015). The zoonotic potential of these worms can also cause significant health threats in humans. Since helminth control is usually based on the mass treatment of farm animals with anthelmintics, which are not sustainable due to the development of anthelmintic resistance, affordability and the presence of drug residues in some animal products (Williams *et al.* 2014), the desire for a more sustainable farming practice has resulted in an intensified effort to find alternative helminth control options which are less reliant on chemotherapy, improves growth and animal welfare.

For a 28-day feed trial, 20 semi-intensively managed pigs (11 weeks old; 21±0.8 kg) were selected based on their initial high faecal egg counts (FEC). The pigs were assigned to four experimental groups (A, B, C and D) in a completely randomized design with five pigs in each group. Group A pigs were used as control and fed with the conventional pig grower feed, while groups B, C and D were the experimental groups fed with 5%, 10% and 15% of dry chicory roots (DCR) inclusion levels in their diets respectively. Faecal samples were collected from pigs at days 1, 14 and 28 for parasitology analysis. The helminth eggs were identified and the FEC expressed as EPG (egg per gram) were quantified. Using the McMaster counting technique, a scoring system of EPG = 100 = low infection, EPG >100 <500 = moderate infection and EPG = 500 = high infection was used. Growth parameters like feed intake (FI), average daily gain (ADG), total weight gain (TWG) and feed conversion ratio (FCR) were recorded. Data were presented pictorially and statistically analysed ( $P<0.05$ ) using one-way ANOVA in XLSTAT 2018.

There were differences ( $P<0.05$ ) in FECs between the treatment groups. These groups recorded lower FEC on Day 28 compared with Group A (Figure 1a). The mean faecal egg count reduction (FECR) over 28 days was 76.2%. This rate was lower than the already recorded 80% - 90% reduction threshold for plant secondary metabolites (Githiori *et al.* 2006). The lower reduction rate recorded in this study may be due to several factors like false-negative parasitology results, etc. Differences ( $P<0.05$ ) were recorded for FI across all groups for week 1. Group C pigs recorded a higher TWG (Figure 1b) compared to other groups, and the overall best feed conversion ratio (1.8:1).



**Figure 1. Patterns of (a) faecal egg count reduction and (b) total weight gain in pigs fed 0% (A), 10% (B), 15% (C) and 20% (D) dry chicory roots.**

From this study, DRC is effective in reducing the FEC of helminths and improving growth in grower pigs. It is therefore recommended that DCR be included at 10% in the diets of grower pigs parasitized by helminths.

## References

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