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A proposal for the integral use of the divi-divi fruit (*Cesalpinia coriaria*) for oil and gas well drilling, animal nutrition and social-environmental development

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In this work we present the potentialities of the Dividivi fruit and its powder for: a) the formulation of a water-based drilling fluid (WBDF); b) its use as a leguminous fodder for ruminants and c) The activity as a source of sustainable jobs in rural communities that promotes primary forests ecosystems protection. The tannins extract in the form of divi-divi fruit powder (*Caesalpinia coriaria*), contains 47.0% w/w of total tannins (hydrolyzable tannins plus condensed tannins) of which 64.4% w/w corresponds to hydrolysable tannins. Dividivi tannins in WBDF showed a nine (9) times higher deflocculant efficiency than heavy metals commercial modified tannins. Commercial modified tannins do not improve their deflocculant efficiency with increased tannin content, while the contrary proved to be true for the WBDF manufactured with Dividivi tannins. Bromatologic and structural analysis of the already processed, lowered-tannin fruit residuals (wet basis), suggest that it can be used as a maintenance fodder for cattle raising: 5.33% w/w crude protein, 9.68 % (w/w) moisture, 77.03 % (w/w) nitrogen-free extract (NFE) (Weende Method), 11.38% (w/w) neutral detergent fiber (NDF) and 5.52 % (w/w) acid detergent fiber (ADF) (Van Soest method). The production of 15 tons of Dividivi tannins in the artisanal way here presented with the help of rural community of Boqueron (Anzoategui state/Venezuela) served as a pilot model of social-productive development that benefitted 245 families. Since the raw material (Dividivi fruits) is as non-wood forest product (NWFP), this activity proposes the sustainable use of a NWFP that promotes the wise management and protection of dry forests ecosystems by the associated human communities, while improves the generation of economical incomes for these rural community and contributes to cattle-food security.

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