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Anaerobic digestion of poultry manure: Impact on microbiological quality of *Solanum macrocarpon* Linn (*Solanaceae*) in Benin

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Background and objectives: Vegetables are excellent enrichment and diversification of food intake. In Benin, many vegetables are available to people through the gardening including *S. Macrocarpon*. Among the organic manures used for gardening, poultry manure is very useful. Despite the interest in the reuse of this kind of manure, contamination due to the presence of pathogenic bacteria represents considerable constraints. The sanitation of poultry manure becomes a real necessity. This is essential to ensure the quality of *S. Macrocarpon* produced in Cotonou.

Methods: A production method has been proposed and evaluated in order to allow the production of vegetables poorly contaminated by bacteria as fecal coliforms, *Escherichia coli, Enterococcus, Staphylococcus* with positive coagulase, mesophilic bacteria and *Salmonella.* Thus, an anaerobic digestion of manure for three weeks followed by drying a week in aerobic conditions was made.

Results: Levels of bacteria decreased in the compost, with values from 6.5.106 CFU/g to 3.4.104 CFU/g for fecal coliforms and 3.5.105 CFU/g to 5.4.103 CFU/g for Enterococcus. Lead complexed by chemical reactions was reduced with an amount from 2.39 mg/kg to 0.204 mg/kg. The agronomic value of these manures was improved by increasing phosphorus levels from 9.96 % to 16.40 % and the reduction of total nitrogen from 18 900 mg/kg to 13096.33 mg/kg.

Conclusions: Anaerobic digestion is done to reduce exposure by eliminating or inactivating pathogens. The main pathogen removal parameters are time and temperature. Overall, the conventional mesophilic digestion around 37°C eliminates order of magnitude 99% of pathogens, as was the case in the present study. The data from this study allow to consider a large-scale production of *S. macrocarpon* with improved hygienic quality.

Biography

Dougnon T Victorien has completed his PhD at the age of 25 years from University of Abomey-Calavi, Benin. He works a lot in the area of fields related to the safety of African foods. He has published more than 25 papers in reputed journals and has received a lot of prizes around the world.

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