Title: Effects of *Oxalis barrelieri* L. (Oxalidaceae) aqueous extract on diarrhea induced by *Shigella dysenteriae* type 1 in rats.

Michel Archange Fokam Tagne[1*], Paul Aimé Noubissi[2,3], Gaëtan Olivier Fankem[2], René Kamgang[2,4]

[1]Laboratory of Medicinal plants and Galenic Formulation, Department of Biological Science, Faculty of Science, University of Ngaoundéré, Cameroon.

[2]Animal Physiology Laboratory, Faculty of Science, University of Yaoundé I, Cameroon.

[3]Department of Zoology and Animal Physiology, Faculty of Science, University of Buéa, Cameroon.

[4]Endocrinology and Radioisotopes Laboratory, Institute of Medical Research and Medicinal Plants studies (IMPM), Yaoundé, Cameroon.

*Corresponding Author: P.O. Box.454 Ngaoundéré (Cameroon) – mafokam@univ-ndere.cm/ fmarchange@gmail.com, Tel: (237) 675041455

ABSTRACT

Oxalis barrelieri is a medicinal plant commonly used in Cameroon, for the treatment of many diarrheal diseases. The antibacterial properties of *Oxalis barrelieri* aqueous extract (WOb) against *Shigella dysenteriae* type 1 were investigated *in vitro* and *in vivo.* Antibacterial activity was evaluated *in vitro* by disc diffusion method and by macrodilution method. *Shigella dysenteriae* type 1 (*Sd1*) at a dose of 1.2×10^9 CFU was administrated orally to rats to induce shigellosis. For 6 consecutive days, diarrheic rats were treated with *Oxalis barrelieri* aqueous extract (50, 100 mg/kg BW) or norfloxacin (20 mg/kg BW). The diarrheal stool weight and *Shigella dysenteriae* type 1 density were assessed during the treatment period, and death rate recorded. Nitric oxide (NO) production in blood and in colonic homogenate, and blood parameters were assessed and the histological section of the colon was performed in the survivors. The MIC and MBC of WOb were respectively 6 mg/mL and 25 mg/mL. The mean MBC/MIC ratio for WOb against *Sd1* was high (> 4), WOb could be classified as a bacteriostatic drug. WOb significantly ($P<0.01$) reduced bacterial density and diarrheal stool weight. WOb decreased NO production ($P<0.01$) in large intestine, and protected the mucosa of the colon from bacterial destruction. The results suggest that *Oxalis barrelieri* aqueous extract possesses bacteriostatic and antidiarrheal activities, and reduces damages caused to intestinal mucosa barrier by pathogenic mechanisms of *Shigella*. This extract could be used as an alternative therapeutic for infectious diarrhea.

Key words: *Oxalis barrelieri*, Anti-diarrheal activity, antibacterial susceptibility, *Shigella dysenteriae* type 1, rat.

Biography

Dr Michel Archange Fokam Tagne working as a **Senior Lecturer,** Laboratory of Medicinal plants and Galenic Formulation, Department of Biological Sciences, Faculty of Science, University of Ngaoundéré, Cameroon. **Specialization:** Animal Physiology and phytopharmacology of gastrointestinal disorders.

Research Interests:1) Discovery of novel pharmaceutical products that can be developed to novel drugs in particular antidiarrheal, antimicrobial and antiinflammatory.