

# Human, Animal and Environmental Impacts on Drinking Water Quality: Implications on Diarrhea Occurrence

Ndakwe Abigail Tifuh<sup>1</sup>; Elise Stephanie Mvodo Moyo<sup>1,2,3</sup>; Vema Binwih Andu Ambe<sup>1</sup>, Marie Michelle Mango Tsasse<sup>1</sup>; Anastasie Ngono<sup>1,2</sup>; Alessandra Falchi<sup>3</sup>

<sup>1</sup>Faculty of Agriculture and Veterinary Medicine, University of Buea, PO Box: 63, Buea, South West Region, Cameroon. \*Corresponding author: abigail.tifuh@gmail.com\*

<sup>2</sup>Foundation for Entrepreneurship, Research and Development (FERD), Akonolinga, Centre Region, Cameroon

<sup>3</sup>URBIOSCOPE, Faculty of Science, University of Corsica Pascal Paoli, 20250 Corte, France

## INTRODUCTION AND OBJECTIVES

### Background of study

- The World Health Organization (WHO) estimates that, in 2012, 12.6 million deaths globally, representing 23% of all deaths, were attributable to the environment.
- Evidence suggests a link between sanitation, polluted drinking water and health. Particularly, contamination by human or animal faeces is the most regular and widespread health risk associated with drinking water; leading to waterborne diseases such as cholera, dysentery and diarrhoea diseases.
- This study was conducted in Akonolinga health district of the Nyong et Foutou division, located 100 km East of the Centre Region of Cameroon. This site was selected based on its proximity to the Nyong river, which links water sources of the neighbouring villages. Unfortunately, health systems face difficulties in proper data collection and reporting of water-borne and water-related diseases.

### Objectives

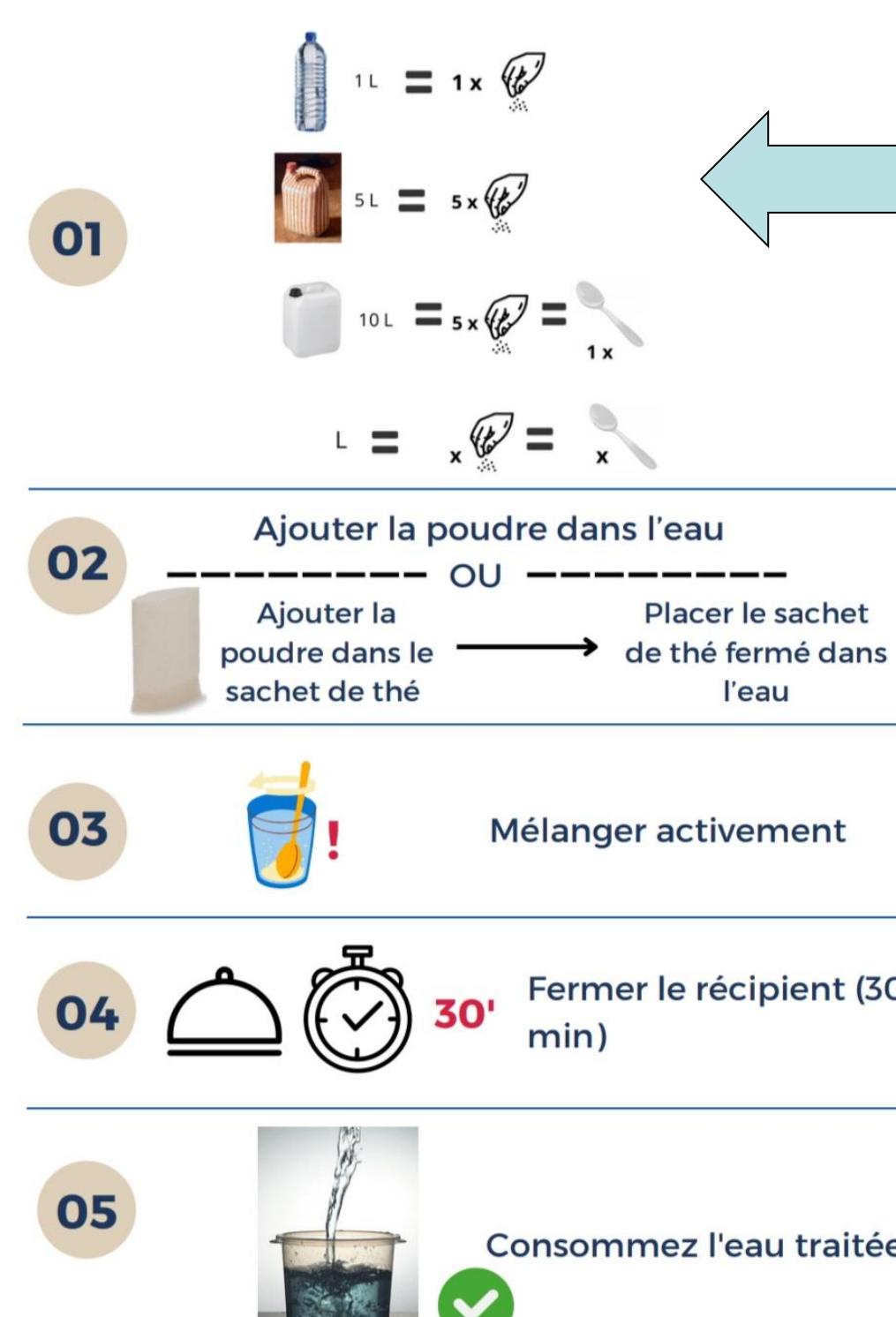
- Thus this study aims to assess the microbial quality of water used for consumption so as to evaluate its implication on the occurrence of diarrhoeal diseases as influenced by humans, animals and the environment.
- To initiate baseline information enabling sensitization of local communities concerning water purification strategies, including the use of Moringa Powder.

## MATERIALS AND METHODS

- A total of 134 households and 122 water points were sampled from 6 villages in 2022, 3 villages were further selected on the bases of limited WASH practices and presence of domestic animals, where 80 households were sampled.
- Two structured questionnaires were designed to answer a number of socio-demographic, economic and WASH/behavioural factors and report from use of Moringa, developed with Kobokollect. Analysis done using multivariate logistic regression
- Water samples were tested for *E. coli* and total coliform concentration in drinking water sources using Aquagenx field test kits, and incubated for 24 hours.



### Purification de l'eau - graines de Moringa



### Réduction poudre - graines de Moringa



## RESULTS & DISCUSSION

### Results of socio-demographic factors:

- Results showed that the major drinking water sources were unprotected springs, dug wells, and boreholes.
- 85.92% of population depend on subsistence farming, 40.85 with large family size of >10 and 28.17% with income of >500.000frs/year.

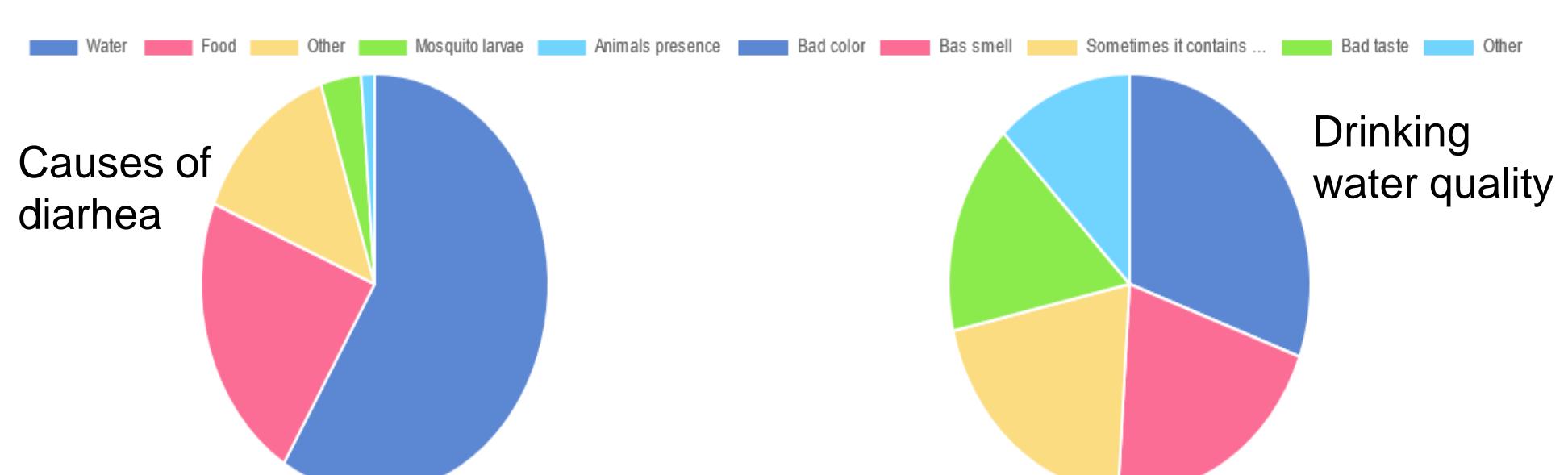


Fig.1 Population awareness of the possible sources of diarrhoea and the quality of drinking water

- We found that, 90% of households had animals like poultry, cats, dogs and rats which are vectors of pathogen transmission, and 48% reported occurrence of diarrhea. The highest cases were observed in the dry season where water sources shrunk, reducing the quantity of water available for household hygiene, thus increasing diarrhea occurrences.

### Results of Microbiological tests:

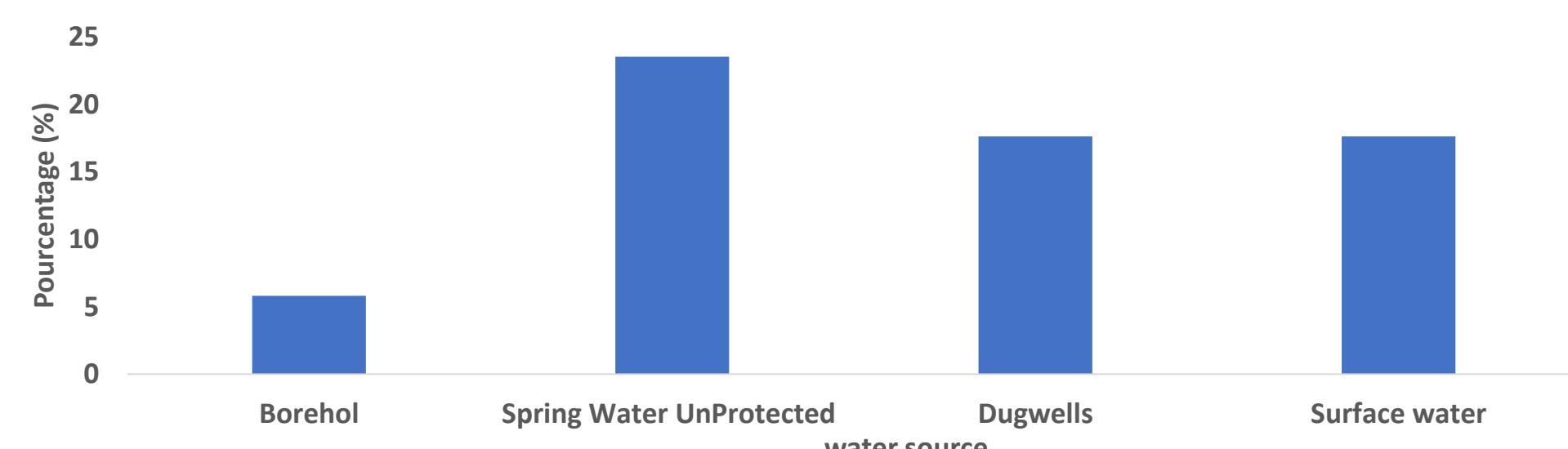
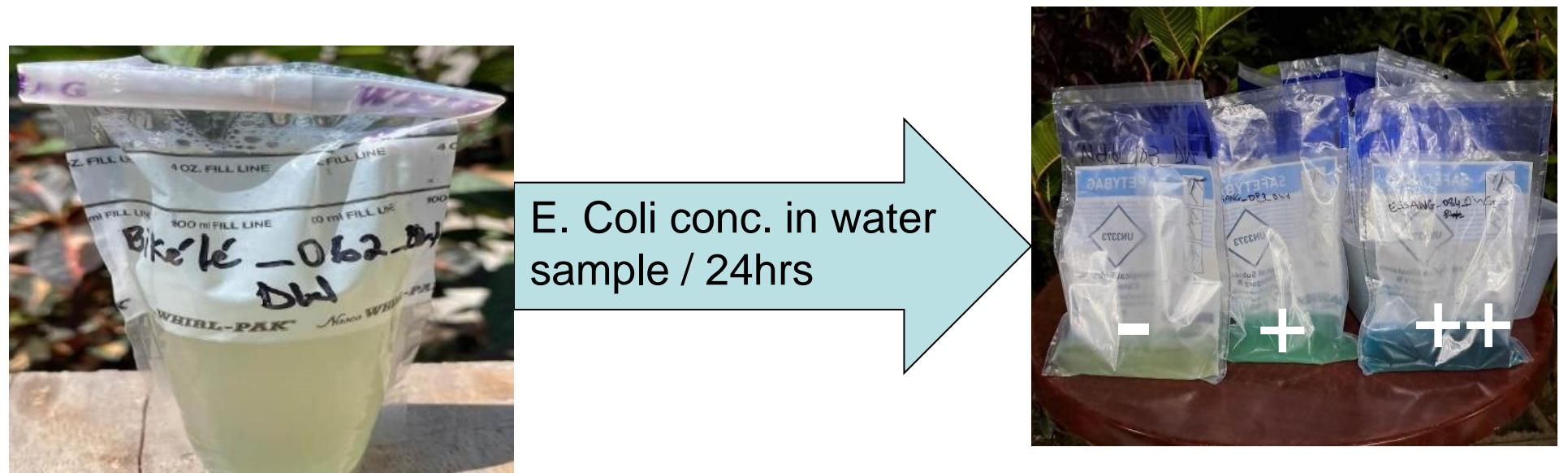


Fig. 3. Total coliform/E.coli rate in different water sources



- Water source: 12 samples from 17 test positive (67%)
- Drinking Water: 65 samples from 71 test positive (91%)

### Results from Treatment of Water Using Moringa Powder

- 60% of respondents tested a positive change to water taste after treatment with moringa powder, and 90% found the method easy and will continue with it.

## CONCLUSION/RECOMMENDATION

Improvement in livelihood of local communities is essential to reduce risk of water contamination, thus reduce rate of diarrhea diseases.

Natural and local purification methods like Moringa powder are viable options to reduce total coliforms/E. Coli concentration in drinking water. One health research approaches are encouraged to tackle water health and agro-environmental challenges that create avenues for water, sanitation and hygiene (WASH) implementers

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