



## FERMENTED WATER-BASED INK AS A POTENTIAL SOURCE OF PROBIOTICS

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### ABSTRACT

*Almajirai* (Singular: *Almajiri*) are students of the informal Islamic system of education existing in Nigeria's northern part for centuries. Lack of proper care and concern from the public and government subject the students to desperate means of subsistence. Despite eating leftover foods usually at verge of spoiling, the *Almajiri* hardly fall sick. The pupils habitually used a locally made water-based ink for writing script on paper or local wooden stake. The inks are kept in an inkpot for several months and years and therefore support a spontaneous fermentation. The ink is used frequently as a folk medicine and charm. We anticipate the live microorganisms present in the fermented ink are responsible for immune responses that maintain intestinal balance in these pupils. In exchange for good health, the ink can be a potential source of probiotics.

**KEYWORDS:** *Almajiri*; Probiotics; immunity; folk medicine; ink-pot.

### 1. INTRODUCTION

The word "Almajiri" is originated from an Arabic word 'Al-Muhajirun' which means emigrant or a traveler that seeks for Islamic knowledge (Taiwo, 2013). The *Almajiri* is a system of education that is similar to the madrassah in Central Asia which is in existence for several centuries back. In Nigerian context, the term *Almajiri* is used to describe male child age between 4 to 18 years that are found in all cities and villages in the Northern part of Nigeria. (Abdulmalik *et al.*, 2009; Taiwo, 2013).

The *almajiri* pupils travel far from their respective homes to a devoted "Alaramma" (Instructor) to receive education and their upbringing without scholarship. Due to their large number and low income of the instructor, the *Almajiri* pupils leave in dilapidated houses that served as their classes and schools in the day and sleep in it in the night. Many of these young pupils beg daily for food and money as a means of subsistence (Hoechner, 2015; Ngohi *et al.*, 2007).

*Almajiri* may find job in the farm or as domestic worker in middle and upper class households (Hoechner, 2015), but majority of them engage in begging for foods. Taiwo (2013) Stated that what they eat as the pathetic aspect of their life, they do not care about the food cooked, stale or fresh, it can be eaten from anywhere. Sometimes they

take in leftovers and foods on the brink of spoilage (Hoechner, 2015). It is surprising however to that this *Almajiri* rarely fall sick (Taiwo, 2013). This raises a serious question on why and how this happens.

For centuries, ideas, goods as well as people traveled from one part of the world to another, a typical example is water-based ink used in Northern Nigerian manuscripts, the recipes used in making these inks are mainly botanical resources. This revealed a possible connection between inks and medical treatments, where ink is washed and used for body wash or drunk to get relief from certain illness (Biddle, 2011; Rigasa *et al.*, 2013).

The inks are kept in an ink-pot for several months and years and therefore favor a spontaneous fermentation. The *almajiri* pupils about 10 million (Adamu, 2010), take in this fermented ink frequently with unsubstantiated reason but as a norm or traditions inherited from ancestors. This fermented water-based ink might contain certain live microorganisms that confer to the healthy living of these pupils. Probiotics are known to exert immune response and improved the microbial balance of an individual (Arasu *et al.*, 2016; Georgieva *et al.*, 2015).

## CONCLUSION

For centuries, the *almajiris* developed certain defense mechanism that is not fully understood. Studying of the live microorganisms present in the fermented water-based ink might unlock the esteem secrets. A new potential probiotic strains will emerge if this microorganisms are utilized and maintain. Furthermore, this evidence supports a new research idea that will lead to good health of all being.

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## REFERENCES

1. Abdulmalik, J., Omigbodun, O., Beida, O., Adedokun, B. Psychoactive substance use among children in informal religious schools (Almajiris) in northern Nigeria. *Mental Health, Religion and Culture*, 2009; 12(6): 527-542.
2. Adamu, A. U., Islamic Education in African Countries—The Evolution of Non-Formal Al-Muhajirun Education in Northern Nigeria. *Islamic Education in African Countries, Istanbul, Republic of Turkey*, 2010.
3. Arasu, M. V., Al-Dhabi, N. A., Ilavenil, S., Choi, K. C., Srigopalram, S. In vitro importance of probiotic *Lactobacillus plantarum* related to medical field. *Saudi Journal of Biological Sciences*, 2016; 23(1, Supplement): S6-S10.
4. Biddle, M., Inks in the Islamic Manuscripts of Northern Nigeria Old Recipes, Modern Analysis and Medicine. *Journal of Islamic Manuscripts*, 2011; 2(1): 1-35.
5. Georgieva, M., Georgiev, K., Dobromirov, P., Probiotics and Immunity *Immunopathology and Immunomodulation InTech*, 2015.
6. Hoechner, H., Porridge, piety and patience: Young Qur'anic students' experiences of poverty in Kano, Nigeria. *Africa: The Journal of the International African Institute*, 2015; 85(2): 269-288.
7. Ngohi, B. U., Ali, M., Naomi, N. A., Counselling Strategies to Help 'Amajiri' Street Beggars in Maiduguri Metropolis, Borno State. *The Counsellor*, 2007; 23: 184-193.
8. Rigasa, Y. A., Isah, B., Gambo, A., Waste Management Services: A Strategy for the Integration of "Almajiri" into Current Waste Management Action Plans of Urban Centres in Northern Nigeria, 2013.
9. Taiwo, F. J., Transforming the almajiri education for the benefit of the Nigerian society. *Journal of Educational and Social Research*, 2013; 3(9): 67.