



# Impact Of Traditional Coloring On The Microbial Composition Of Beninese Cheese Wagashi-Gassirè: An Analysis Via 16s Rrna Gene Sequencing

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## Abstract

*Wagashi*, also known as *Gassirè* in the Fulfulde language, is a traditional cheese widely consumed in Benin, particularly by the Fulani communities. It is made from cow's milk coagulated using a plant extract from *Calotropis procera*, and it plays an important role in the local diet, often serving as a substitute for meat or fish. *Wagashi-Gassirè* is produced in two main forms: a colored version, obtained by adding panicles of *Sorghum vulgare* or *Sorghum codatum*, and a non-colored version, following artisanal practices. To better understand how this variation in processing affects the microbial composition of the product, a comparative study was conducted using the Illumina MiSeq sequencing technique targeting the V1-V2 region of the 16S rRNA gene. The results revealed notable differences between the two cheese types. The non-colored *Wagashi* was dominated by the bacterial families *Lactobacillaceae* (60%) and *Streptococcaceae* (38%), with a high prevalence of species such as *Lactobacillus bulgaricus*, *Lactobacillus fermentum*, and *Streptococcus thermophilus*, known for their fermentation benefits and probiotic properties. In contrast, the colored cheese showed a marked abundance of *Streptococcaceae* (89%) and *Bacillaceae* (10%), including species like *Streptococcus infantarius*, *Aeromonas* sp., *Bacillus cereus*, *Bacillus subtilis*, and *Streptococcus thermophilus*, some of which may be potentially pathogenic. These findings indicate that the traditional coloring process significantly influences the microbial diversity of *Wagashi* and raise the possibility that the non-colored variant could harbor more functional bacteria. However, further investigations are needed to better understand these differences and to assess the safety of the colored variant.

**Key-words:** traditional cheese *Wagashi*, *Gassirè*, High-Throughput Amplicon Sequencing, coloured, non coloured