The determination of geographical origin is a demand of the traceability system of import-export foodstuff. One hypothesis of tracing the source of a product is by analyzing in a global way the microbial communities of the food and links statistically this analysis to the geographical origin of the food (1). Physalis is included in the priority list of many governments’ horticulture and fruit export plan. It is exported from several countries including Colombia, Egypt, Zimbabwe and South Africa, but Colombia stands out as one of the largest producers, consumers and exporters. Colombia exported Physalis in 2004 were worth 14 million USD (2). Sheabutter, only seven countries have statistics. Nigeria accounts for more than 60% of the production of Sheabutter in 2005. It is followed by Mali, Ghana and Burkina Faso, which together account for just under a third of world production in 2005. In Europe, Sheabutter is used mainly (95%) by the chocolate industry (3).

We applied a molecular technique employing 28S rDNA profiles generated by PCR-DGGE as a new traceability technique to detect the variation in fungal community structures of Physalis fruits from three countries (Colombia, Uganda, Egypt) and Sheaberry fruits from three countries (Cameroon, Mali, Senegal).

The DGGE gels showed some significant differences in the migration patterns. However, the duplicates for each sampling location gave statistically similar DGGE patterns throughout the study (Fig. 1, Fig. 2). The band profiles from different countries were different and were specific for each country and could be used as a bar code to discriminate the origin of the fruits. When the 28S rDNA profiles were analyzed by multivariate analysis, distinct microbial communities were detected (Fig. 3, Fig. 4, Fig. 5, Fig. 6).

We demonstrated that there was a link between the fungi populations and the geographical area. This method is a new traceability tool which provides fruit with a unique bar code and makes it possible to trace back the fruits to their original countries.