

**Quality assurance and preservation of African leafy vegetables considering technological and health aspects for the reduction of food losses and the improvement of health and nutritional value, storability and food safety
- HORTINLEA -**

Project consortium

Humboldt-Universität zu Berlin (Huyskens-Keil S.), Max Rubner-Institut Karlsruhe (Trierweiler B., Franz Ch., Geisen R., Huch M., Frommherz L., Kulling SE.), Leibniz-University of Hannover (Mibus-Schoppe H.), University Hamburg (Rohn S.), IGZ (Schreiner M., Maul R.), University Freiburg (Lamy E.), Egerton University, Njoro, Kenya (Opiyo A.), Jomo Kenyatta University, Nairobi, Kenya (Maina J., Kenji G.), University Nairobi (Ambuko J.), Moi University, Eldoret Kenya (Mutui Th.)

African indigenous leafy vegetables (ALV) play a significant role in food security of smallholder farmers in rural and urban/peri-urban areas. Currently, the magnitude of pre- and postharvest losses of ALVs in Kenya can reach up to 50%, being attributed to inadequate conditions during production, transport, storage and marketing. Inadequate postharvest handling and facilities for storage and transport, inappropriate processing methods, and insufficient hygiene conditions in the markets aggravate these problems, causing massive losses along “the field to consumer” chain. In many parts in Africa, subsistence smallholder farmers cannot afford expensive cold storage facilities, thus after harvesting, simple methods are applied. Alternative technologies such as on-farm evaporative coolers, MAP and postharvest treatments need to be explored for adoption. The local used preservation methods include blanching, solar-drying and fermentation, however, despite their wide adoption, significant loss of nutritional product quality and in microbiological contamination occur. Thus, one major aim of the HORTINLEA consortium (Horticultural Innovations and learning for improved Nutrition and Livelihood in East Africa as part of the BMBF “GlobE - Global Food Security” program) is to identify and characterize quality losses during the entire food supply chain (from farmer to consumer) and to improve product quality, food safety and storability by adopting affordable harvest techniques, postharvest handling and processing technologies, including implementing emerging technologies.

Moreover, it is largely unknown in which quantities compounds relevant for a healthy human nutrition (e.g. vitamins, minerals, and secondary plant metabolites) are present in ALVs. For the secondary metabolites even the chemical nature of the substances present in ALV has not been investigated to date. In order to link potentially beneficial effects to certain secondary plant metabolites, extracts as well as isolated and chemically characterized substances are subjected to various biochemical in vitro assays. Additionally, it is unknown to which extent the chemical composition of ALV is affected by agronomical practices, harvesting stages and postharvest treatments. Thus, also these aspects contribute to the understanding of the possible improvement in the nutritional status of the sub-saharan population by optimization of processing and postharvest treatments of ALVs in Kenya.