

Super healthy food: avocado

[Nutrition](#), [Healthy Food](#)



Food spreads are used to commonly spread on bread, but also on other food such as rice and other starchy food, depending on the spread that is used. Margarine, jams, jellies and marmalades are commonly known spread that are particularly spread on bread. Partial hydrogenation of vegetable oil that is involved in the manufacture of margarine brings about trans-fatty acids. Sugar is important ingredient in making jam, jellies and marmalades. Nutritionists blame excess sugar and trans-fatty acids for non-communicable diseases such as cardiovascular diseases and diabetes.

Avocado food spread would be better alternative to aforementioned food spreads. The majority of fatty acids in avocado are mono-saturated fatty acids, which are linked to lower bad cholesterol in human body. Avocado is also rich in phytochemicals, which provide health benefits that are beyond improving nutritional status of consumers including, but not limited anti-cancer effects. The use of avocado food products is limited by their very short shelf life. The high content of unsaturated fatty acids of avocado makes avocado products to be sensitive to oxidation, hence the product become rancid and unfit for the human consumption. Browning reaction also results in the discoloration of the avocado cuts and leads to the products to be unpleasant and unfit for human use. Though literature suggests that the probability for bacterial growth in fat rich food is not that high, but fungal growth like *Zygosaccharomyces bailli* is possible and may cause microbial spoilage of avocado based products. Many previous researchers have placed emphasis on the proper handling, transport, packaging and appropriate storage to minimize the postharvest losses of fresh avocado fruits, but studies on processing avocados into shelf stable value added avocado

products are scarce. To the best of our knowledge, no detailed study has been so far done to process and scale up avocado food spread to commercial level. This project is therefore needed to expand avocados to healthy food market. The focus of this research study is to process shelf stable avocado food spread that is commercial.

The findings of this research study will be used to scale up avocado food spread to commercial levels and will allow small hold farmers to generate more income and contribute to the improvement of food and nutrition security in the East Africa Region. Also, the results of the current research study will be vital for the minimization of the postharvest losses of avocado fruits.

The successful implementation of the current research project relies on the facts that the research team has solid and required expertise such the stabilization of colloidal solution, postharvest technology and engineering, food microbiology and analysis, food chemistry and analysis and food marketing and consumers' behavior.

Avocado tree is a perennial plant that is commonly grown in the tropic region including the East African countries namely Uganda, Tanzania, Kenya and Rwanda among many other countries. On one hand, the annual production of avocado is estimated to 10, 000 metric tons in Rwanda (NAEB report, 2014), whilst it is estimated to 115, 000 metric tons in Kenya ([www. farmerstrend. co. ke](http://www.farmerstrend.co.ke)). On the other hand, the highest annual production of avocados was estimated to 8, 431 kg in Tanzania between 2005 and 2015 (horticulture study, 2017). No updated literature was seen on the production of avocado

in Uganda, but the data dated back in 2001 estimated the annual production of avocado to 24, 200 tones.

The nutritional and economical importance of avocado could not be underestimated to farmers either in Rwanda or in the region as well.

Avocado is a main source of income for small households particularly in the southern part of Rwanda. Earnings from this fruit are used for supporting families to buy food, pay school fees for their children and covering other family necessities. Avocado promotes the human well-being through the provision of various nutrients and other health benefits to human body.

Indeed, avocado is a source of potassium and is low in sodium. Also, it is rich in B vitamins, vitamin C, vitamin E, vitamin K, fiber and unsaturated fat.

Avocado is regarded as ‘ functional food’. In fact, avocado contains phytochemicals that provide health benefits, which include lowering bad cholesterol and anti-cancer properties (Haiming et al. 2007). Monosaturated fat comprises of 67% of the total fat making avocado to be a healthy food and contributes to lowering the risk for the cardio-vascular diseases and control the blood glucose levels.

In Rwanda, ripe avocado is spread on bread, used as salad dressing, spread on rice and other starchy food. Ripe avocado is also sliced and eaten as pieces accompanying such food as boiled rice, sweet cassava and plantains among many other staple food. Despite the multiple food uses of avocados, they are not available throughout the year, as they are perishable and therefore the postharvest losses of avocado is huge. Moreover, no commercial shelf stable avocado spread is available in the market neither in

Rwanda nor in neighboring countries including Uganda, Kenya and Tanzania, which are beneficiaries of the current research project.

The development of shelf stable avocado food spread is necessary to provide nutrients and other health benefits to consumers throughout year thereby not only contributing to improve food security in the region of East Africa, but also importantly improving the health and wellbeing of the population and citizens of the region.

Agricultural products play a vital role to ensure the national food security in particular and boost the development of Rwanda and other countries in the region of East Africa. The government of Rwanda has been making many efforts to increase the production of agricultural products through the mechanized agriculture where possible and the use of agricultural inputs. This is done in the line of Rwanda's vision to solve the national food security problem and to shift the agriculture system from subsistence to commercial agriculture system thereby allowing Rwanda moving from low income to middle income country. Coffee and tea have been traditional Rwandan agricultural exports for many decades, but the Government of Rwanda has started to make an effort to export horticultural produce. Avocado is among potential horticulture to be exported to higher lucrative market of Europe, USA and other developed countries. However, the potential export of avocado and other horticultural produce is handicapped by the perishability and hence the postharvest quality deterioration of the horticulture products.

The deterioration in quality of fresh fruits and vegetables is the result of physiological and pathological disorders that arise during the production

through supply chain steps that include transport, storage and distribution. The post-harvest performance depends initially on the genotype and later on the handling environment and practices, including temperature, and gas atmosphere and packaging material.

Processing technologies are required to add value to avocado and other food crops and consequently reduce postharvest losses. After harvesting and ripening, the quality of avocado deteriorates quickly and hence becomes unfit for the human consumption. In Rwanda and in many other neighboring countries, avocados are harvested and allowed to ripe for use. However the shelf-life of ripe avocados is very short ranging from minutes to hours. The quality deterioration results from the fat oxidation and microbial activities. To the best of our knowledge, no shelf stable avocado food products are commercialized in the region and probably worldwide. Therefore, there is need for research to develop, stabilize and test the acceptability and marketability of avocado food spread. The development of shelf stable avocado spread will add value to and increase the market share in lucrative marketplaces thereby minimizing the volume and value losses of avocados after harvest, and improve on food security and income, especially for small household's families of the region.

Food spread is food that is spread on other food, mainly bread, but also on other food like rice and other starchy food to enhance the flavor or improve the texture of food. The common food spreads include, but are not limited to margarine, jams, jelly and marmalades. Margarine is regarded as unhealthy due to its high level of trans-fatty acids that are produced during the partial

hydrogenation that is part of the process of the margarine production. Sugar is common ingredient of jam and jelly and hence considered as high calories food, which is blamed by nutritionists for its contribution to non-communicable diseases like cardiovascular diseases and diabetes. The fatty acids profile of avocado is predominately mono-unsaturated fatty acid at the level of 67%, which make avocado to be healthy food. Avocado food spread is better alternatives to other unhealthy food spreads.

The findings of this research work will therefore contribute to the improvement of public health through minimizing the risk of non-communicable chronic disease by formulation of healthy avocado food spread. The current research study will additionally make it possible for avocado to expand in the high value healthy food market.

Increased valorization of avocado will also contribute to improvement of food security in the region and generate income for smallholder farmers thereby increasing the standards of living of the population and citizens of the region.

The findings of the current research study will also be used to scale up the production of avocado based food spread and consequently allow increased creation of off-farm jobs. As the industrial scale production of avocado spread will go on, novel technologies will be developed to automate the production line of avocado spread and control ripening process of avocados among others.