

Preparation and Consumption of Orange-Fleshed Sweet Potatoes in Rural Households in Burundi

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Abstract

The aim of this study is to highlight how the orange-fleshed sweet potatoes (OFSP) are prepared and consumed by rural Burundian households. The study was carried out in 4 provinces in low-altitude regions, on the Imbo plain and along the shores of Lake Tanganyika. A sample of 379 households out of a total of 3312 farmers was drawn. The study revealed that the most common methods of preparation were boiling (94.62%) and frying (46.75%). The majority of households surveyed consume the OFSP cooked by boiling water (97.77%), and almost half of the population surveyed (49.54%) consume them in the form of French fries. Many households (97.87%) consume the OFSP after peeling, and 23.40% of the population surveyed do not remove the skin. Most households (76.80%) have never processed orange-fleshed sweet potatoes into flour. 16.20% of households dry sweet potatoes using a solar dryer, and 7.00% of them use natural convection dryers. The way the orange-fleshed sweet potatoes are prepared affects the beta-carotene content, which is high in this food and helps prevent vitamin A deficiency. Future research should quantitatively assess the impact of the way rural households process the OFSP on their β -carotene content.

Keywords

Orange-Fleshed Sweet Potato, Processing, Vitamin A, β -Carotene, Cooking, Drying

1. Introduction

Orange-fleshed sweet potatoes are rich in β -carotene [1], often exceeding 8000

IU/100g, which can meet the recommended daily requirement of 5000~25,000 IU [2] when consumed. Compared to white-fleshed sweet potatoes, OFSPs have high antioxidant content [3], especially the beta-carotene which, once ingested, is converted into the equivalents of retinol (vitamin A).

Scientific studies have shown that 12 units of beta-carotenes produce the equivalent of one unit of vitamin A once consumed [4]. Vitamin A is one of the micro-nutrients essential for the immune system and contributes to better visual acuity in humans [5]. Huang *et al.* [6] state that OFSP have a preventive effect against infectious diseases and for vitamin A deficiency [7]. Consuming orange-fleshed sweet potatoes is a recognized and effective approach to combating vitamin A deficiency [8] [9].

According to Bouis and Saltzman [10] and Low *et al.* [11], orange-fleshed sweet potatoes also help improve the nutrition of low-income groups and vulnerable populations.

There are various ways of preparing OFSP to preserve its nutritional value. In Brazil, studies have shown that flour made from OFSP is rich in vitamin A and also has positive impacts on human health [12].

In Africa, orange-fleshed sweet potatoes have been shown to have a significant capacity to increase vitamin A intake, although their preparation/processing results in a 25% to 30% reduction in beta-carotene content [13]. In sub-Saharan Africa, over 90% of sweet potato consumption is after boiling in water or steaming [14].

In the DRC, a scientific study has shown that boiling in water and preparing French fries from orange-fleshed sweet potatoes are the cooking methods most preferred by the population [15]. In Kenya, scientific research has revealed results on how sweet potatoes are generally prepared. In fact, 88.6% of respondents preferred boiling in water, while 11.4% opted for frying [16].

In Burundi, the official launch of the cultivation of the orange-fleshed sweet potato took place in November 2018 by the Government of Burundi with the objective of improving the nutrition of the population in general and preventing avitaminosis A in particular, through cultivation, consumption, and processing of OFSP into other food products.

However, there is a lack of research in Burundi into the methods used to prepare OFSP, while the technological processes used in foodstuffs have an influence on the nutrient composition of the finished product [17]. The results of this study open up new avenues of research into this fascinating question, which deserves to be explored in depth to find out whether the ways in which OFSP are prepared in households preserve an adequate quantity of beta-carotene to prevent avitaminosis A in consumers of this food commodity.

The aim of the study is to highlight the ways in which orange-fleshed sweet potatoes are prepared and consumed by rural households in the low-altitude regions of the Imbo plain and on the shores of Lake Tanganyika in Burundi. It concerns a sample of 379 households out of a total of 3312 farmers (where one individual represents one household) who have been supported by an agricultural development project focusing on OFSP cultivation.

2. Materials and Methods

To identify the ways in which orange-fleshed sweet potatoes are prepared and consumed in Burundian households, a survey questionnaire was used. The sample size was calculated using the formula for a finite population, adding a rate of 10% to prevent non-responses [18]:

$$n = \frac{t^2 N}{t^2 + (2e)^2 (N - 1)}$$

where:

n : household sample size;

N : Total number of households receiving support for OFSP cultivation;

t : Coefficient of the margin of error deduced from the confidence rate, $t = 1.96$ if the confidence rate is 95%.

e : Margin of sampling error = 5% = 0.05.

In fact, the number of households supported in the cultivation of orange-fleshed sweet potatoes is 3312, scattered over 59 hills in Burundi's 4 provinces (Bubanza, Bujumbura, Cibitoke, and Rumonge). After the formula was applied, a sample of 379 households was found and surveyed.

Thus, the total of 379 was taken into account in the present study, after adding 10% of the households to prevent non-responses, with the aim of consolidating the data set.

Stratified sampling was used to draw a representative sample in the hills. As the survey took place in 4 provinces (Bubanza, Bujumbura, Cibitoke, and Rumonge), there are 4 strata. Within each stratum, hills were randomly selected as sub-strata, and the following formula was applied to determine the number of households to be surveyed per hill [19]:

$$n_i = \frac{nN_i}{N}$$

where:

n_i : Household sample size for each hill;

n : Total household sample size;

N_i : Number of households per hill;

N : Total number of households.

These households were chosen because they had received support in cuttings from the OFSP in the period 2019 to 2023, to promote this crop in Burundi. Data were collected individually from households. At the end of each day, the data collected on smartphones were transferred to the Kobo Collect internet platform. After collection, the data were statistically analyzed using STATA software, where a proportion test was applied at a significance level of 5%.

Indeed, the proportion test is chosen because it is a statistical method used to determine whether an observed proportion in a sample differs significantly from a theoretical proportion or from another observed proportion. For this study, the following null hypotheses were considered: 1) The proportion of households pre-

paring boiled in water is equal to that preparing them in the form of French fries; 2) There is no difference between the proportions of households consuming OFSP boiled in water and those consuming them in the form of chips; 3) The proportion of households that cook OFSP after peeling them is equal to that of households that cook them with the skin on; 4) The proportion of households that consume OFSP after removing the skin is equal to that of households that consume them with the skin on; 5) The percentage of households that check whether OFSPs are ready to eat before stopping cooking is equal to the percentage of households that stop cooking without checking.

The results enabled us to find out how orange-fleshed sweet potatoes are prepared and consumed (boiling in water, preparation of French fries, cooking without peeling, cooking after peeling, drying to obtain flour, as well as the level of consumption of prepared products) by households in the low-altitude regions of Burundi.

In carrying out a study on the forms of preparation and consumption of orange-fleshed sweet potatoes, we are committed to respecting fundamental ethical principles, in particular the free and informed consent of participants, the confidentiality of data, the anonymity of respondents, respect for their dignity and their rights, and the exclusive use of data collected for strictly defined scientific or professional purposes. It has been stated that no personal information will be disclosed without prior authorisation and that all measures will be taken in accordance with the laws and regulations in force. We have therefore requested authorisation from the local authorities to conduct this study in compliance with established ethical standards.

3. Results

Different forms of preparation and consumption of OFSP were highlighted in the households surveyed, and the results are as follows:

3.1. Orange-Fleshed Sweet Potato Derivatives

According to the results of the survey, 94.62% of households cook OFSP by boiling water, and 46.75% prepare them in the form of French fries. Other types of products are prepared less frequently, as shown in **Figure 1**.

The proportion test shows that households preparing OFSP cooked by boiling water are superior to those preparing French fries, and the difference is statistically significant (p -value < 0.05), as shown in **Table 1**.

Table 1. Preparation of fried and OFSP boiled in water.

Variable	Average	$P > z $	[95% Conf. Interval]	
Rate of preparation by boiling water	0.95		0.93	0.97
Rate of preparation of French fries	0.47		0.43	0.51
Statistical difference between the two prepared products	0.48	0.000	0.43	0.52

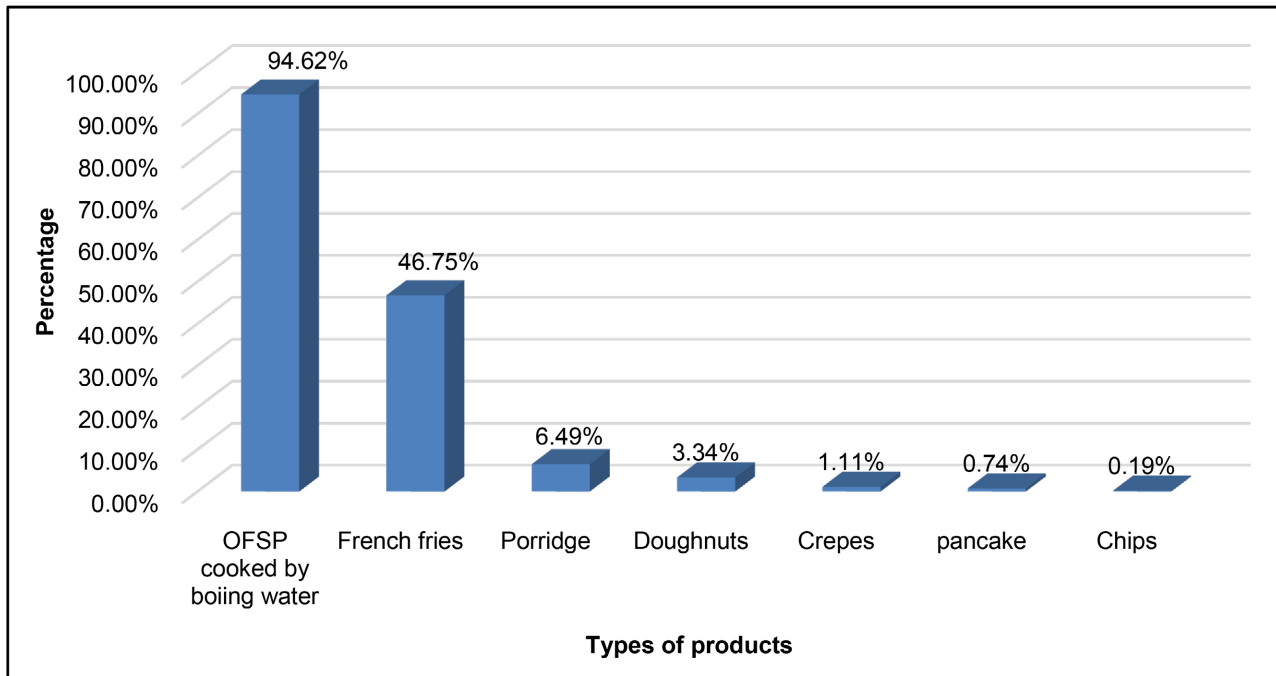


Figure 1. Prepared products from orange-fleshed sweet potatoes (OFSP).

3.2. Consumption of Products Prepared from OFSP

The survey results show that 97.77% of households consume OFSP cooked by boiling water, compared with 49.54% who eat French fries. Other forms of preparation and consumption of this food, particularly in the form of porridge, doughnuts, crepes, pancakes, and grilled, are very poorly represented (**Figure 2**).

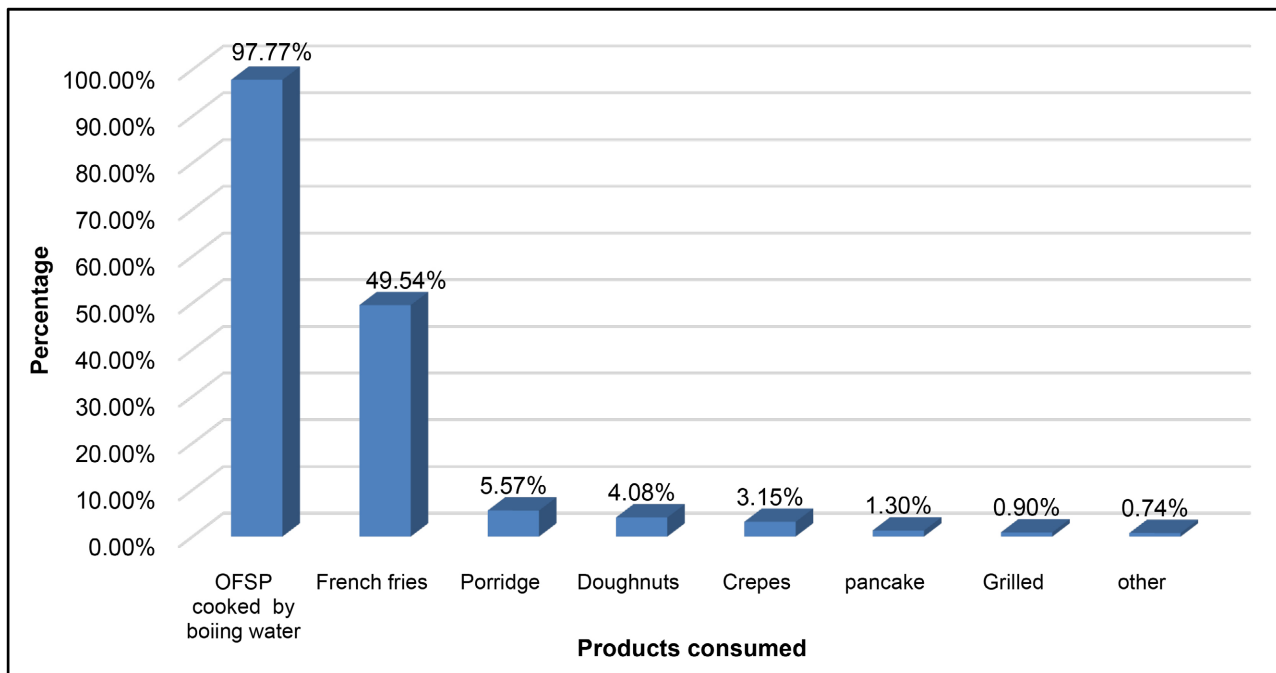


Figure 2. Consumption rate of prepared products.

The proportion test shows that households consuming OFSP cooked by boiling water are higher than those consuming French fries, and the difference is statistically significant (p -value < 0.05), as shown in **Table 2**.

Table 2. Consumption rate of French fries and OFSP cooked by boiling water.

Variable	Average	$P > z $	[95% Conf. Interval]	
Boiling water consumption rate	0.98		0.97	0.99
Consumption rate of French fries	0.50		0.45	0.54
Statistical difference between the two products consumed	0.48	0.000	0.44	0.53

According to the population surveyed, the reasons for preparing/consuming OFSP cooked by boiling water and French fries at a high level are that they are easy to prepare (89.17% and 77.55% respectively), while the reasons given for the other products are shown in **Figure 3** below.

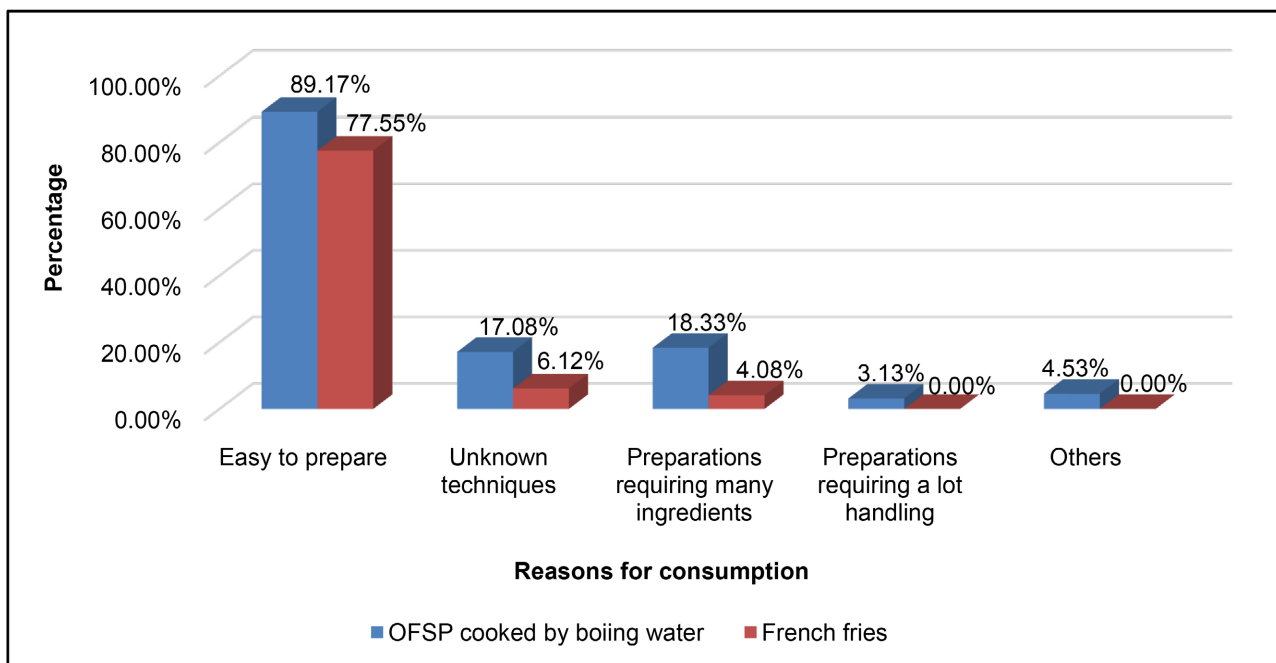


Figure 3. Reasons for consumption of products derived from OFSP at various levels.

3.3. Peeling/Non-Peeling and Consumption of OFSP

As mentioned in **Figure 4**, 93.69% of households in the study area cooked OFSP after peeling, compared with 73.46% of households that cooked them with the skin on.

According to **Table 3**, the proportion test shows that households which cook OFSP after peeling are more likely to do so than those that cook with the skin on, and the difference is statistically significant (p -value < 0.05).

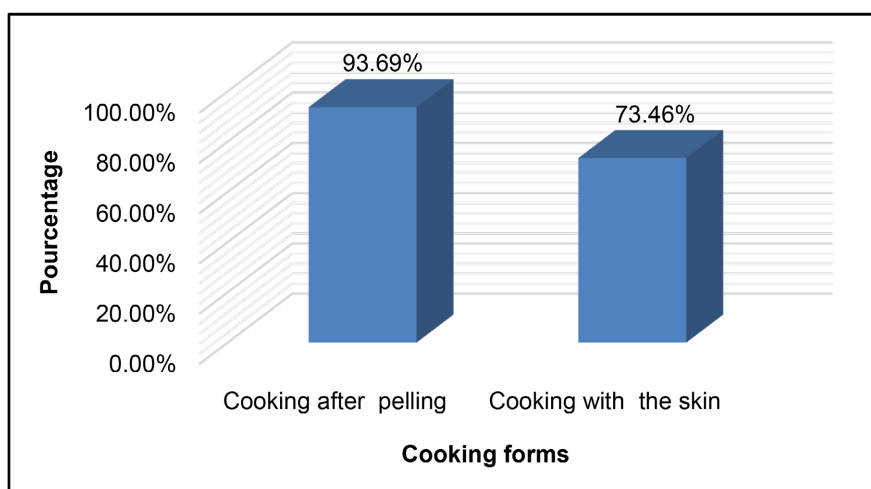


Figure 4. Cooking after peeling or with the skin on.

Table 3. Cooking OFSP after peeling or with the skin on.

Variable	Average	P > z	[95% Conf. Interval]	
Cooking after peeling	0.94		0.92	0.96
Cooking with the skin	0.73		0.70	0.54
Statistical difference	0.20	0.000	0.16	0.24

3.4. Consumption of Peeled or Skin-On OFSP

Almost all households (97.87%) consume OFSP after peeling, while 23.40% of the sample consume them with the skin on (Figure 5).

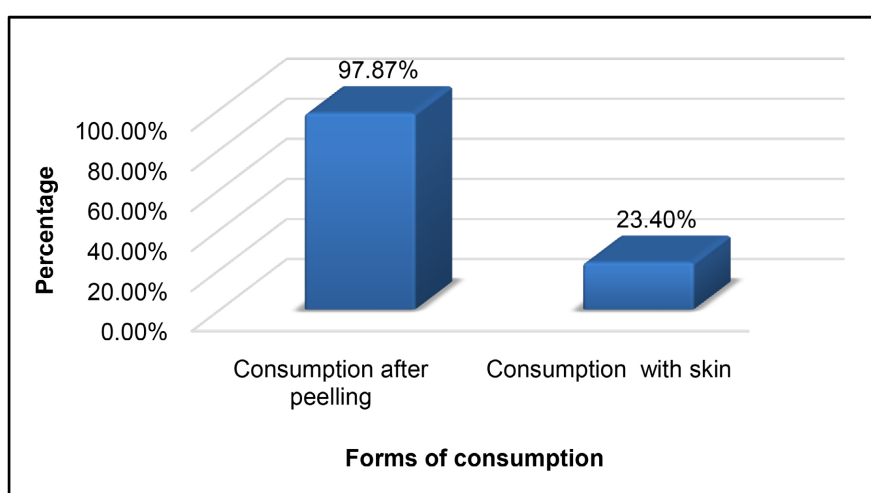


Figure 5. Consumption with or without skin.

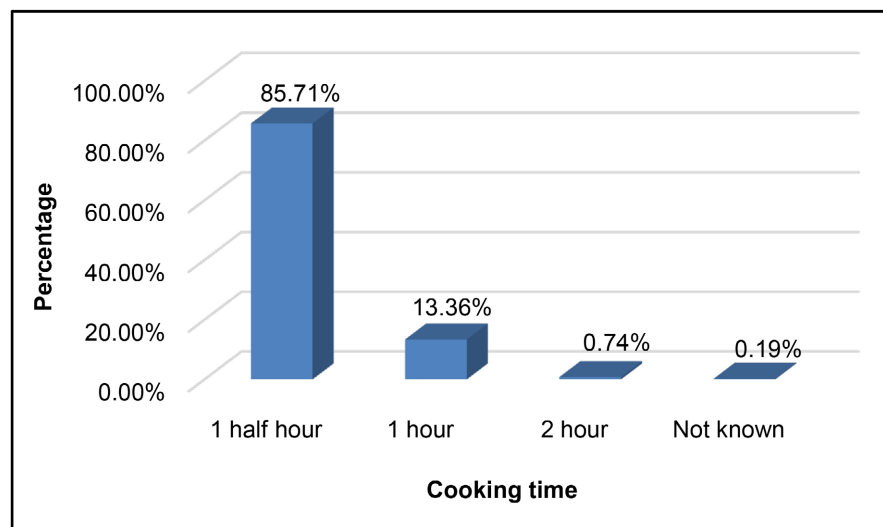
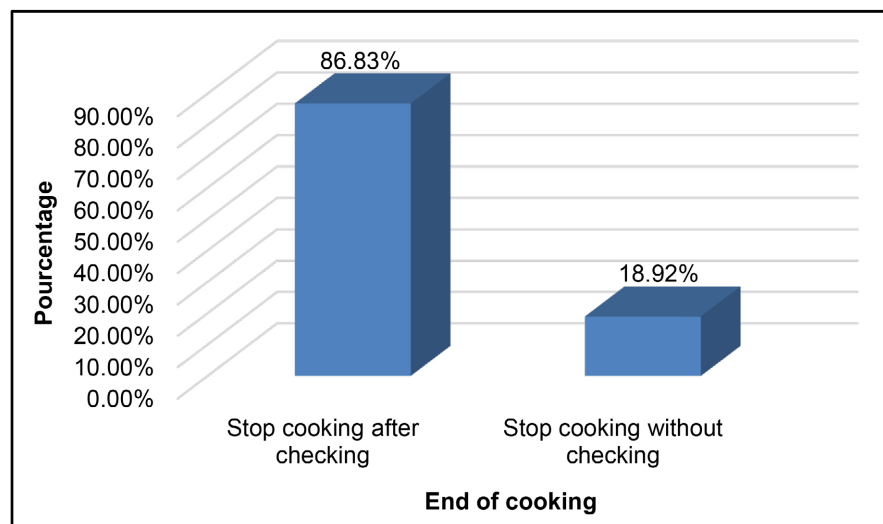
The proportion test indicates that households cooking OFSP after peeling are superior to those cooking with the skin, and the difference is statistically significant (p-value < 0.05), as shown in Table 4.

Table 4. Comparison of OFSP consumption with skin and after peeling.

Variable	Average	P > z	[95% Conf. Interval]	
Consumed after peeling	0.98		0.97	0.10
Eaten with the skin	0.23		0.19	0.28
Statistical differences	0.75	0.000	0.70	0.80

3.5. Cooking Time

With regard to the time taken to cook, many households estimate that they need 30 minutes (85.71%), total time cooking from start to finish. Those who estimate one hour represent 13.36%, two hours 0.74%, and 0.19% say that they do not know how long it takes to cook (**Figure 6**).

**Figure 6.** Cooking time in boiling water.**Figure 7.** Determining when to stop cooking.

To find out whether the orange-fleshed sweet potatoes are ready to eat, the survey results show that many households remove the cover from time to time to check, taking a piece to taste (86.83%), while others stop cooking after a specific time without removing the cover (18.92%) because they know from experience how long it takes for the OFSP to be properly cooked (**Figure 7**).

The proportion test shows that many households stop cooking after checking by removing the cover from time to time, compared with those who cook continuously without checking the cooking level. **Table 5** shows that there is a statistically significant difference between the two methods.

Table 5. Stopping cooking.

Variable	Average	P > z	[95% Conf. Interval]	
After checking, remove the cover.	0.87		0.84	0.90
Without verification	0.19		0.16	0.22
Statistical difference	0.68	0.000	0.64	0.72

3.6. Converting OFSP into Flour

Another form of preparation that is very rarely found in Burundian households is the processing of OFSP into flour. Our survey shows that 76.80% of households never process OFSP into flour. We also found that 23.20% had already processed OFSP into flour, of which 16.20% had dried them in the sun, while 7.00% had dried them in an open-air shed (**Figure 8**).

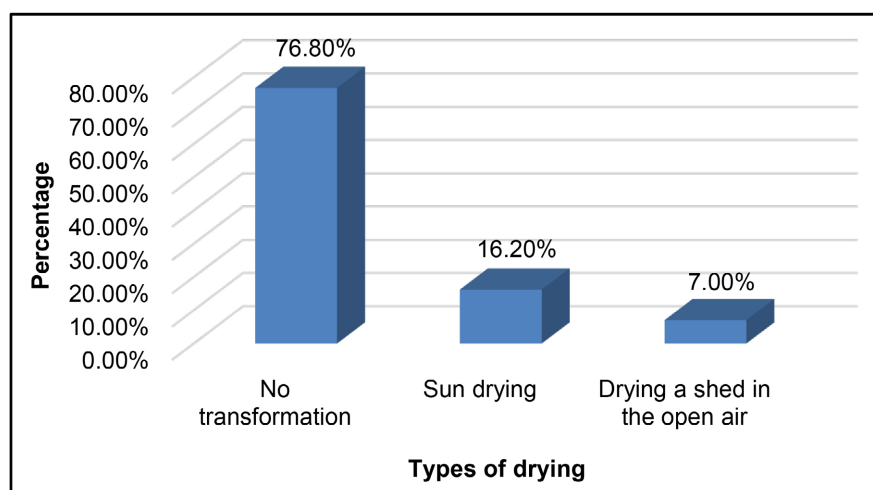


Figure 8. Current state of processing of OFSP into flour.

4. Discussion of the Results

The proportion test at the 5% significance level shows that there are more households preparing and consuming OFSP cooked by boiling water (97.77% and 94.62% respectively) than those preparing/consuming French fries (46.75% pre-

pared and 49.54% consumed). The comparison ratio shows a statistically significant difference at p -value < 0.05 . The reason given by the majority of respondents is that these two products are easy to prepare. These results are confirmed by a study carried out by [15] showing that boiling water and preparing French fries from OFSP are the cooking methods most preferred by consumers at 56.7% and 23.3% respectively. The same authors confirm that boiling OFSP in water is preferred by consumers over other cooking methods because this method is more practical, but also less expensive. Our results are also reinforced by Ndangui [20], who states that in most developing countries, sweet potato is mainly consumed cooked in water. Other studies [16] point in the same direction, stating that 88.6% of respondents said that the most common way of preparing sweet potatoes was to boil them in water, and only 11.4% prepared them as French fries. Other forms of preparation were less common. Another study carried out by [21] corroborates our results, in which 62.2% of mothers consumed boiled OFSP, compared with 27.0% for French fries in a study carried out in Senegal. However, the degree of appreciation of French fries was significantly higher than that of boiled OFSP (95% for boiled OFSP and 99% for French fries) because in Senegal, sweet potatoes are traditionally consumed in boiled form. The author indicates that these results are linked to dietary habits. For our study, this question of appreciation was not asked, but the respondents did not answer that they did not like French fries. It seems that they like them but do not eat them for the reasons given in **Figure 3**. It should be noted that cooking food in water at atmospheric pressure limits the temperature of the product to 100°C [22]

Regarding the duration of boiling water cooking of OFSP, the majority of respondents, at a rate of 85.71%, estimate that they use half an hour from start to finish cooking.

When OFSP are cooked for between 15 and 35 minutes, there is a slight decrease in β -carotene [21]. This reduction is justified because the composition of foods is strongly linked to the technological processes applied to them [17]. Based on the present study, the cooking time (half an hour) generally used by most Burundian households would preserve the β -carotene content of OFSP.

Another finding is that households cooking and consuming OFSP after peeling are more numerous compared to those preparing and consuming them with the skin on, and the difference is statistically significant (p -value < 0.05). These methods of preparing and consuming OFSP are supported by [23], which state that orange-fleshed sweet potatoes can be eaten with the skin. However, the research conducted by [14] does not converge with our results because he recommends not removing the skin before cooking and encourages consumers to eat sweet potato with the skin to maximize the preservation of nutrients, including vitamin A. Many of the households surveyed consume sweet potatoes after peeling, without the skin.

A large proportion of the population do not process sweet potatoes into flour (76.80%), but 23.20% have already done so, including 16.20% of the population surveyed who have dried them in the sun and 7.00% who have dried them in an

open-air shed. This study revealed that processing sweet potatoes into flour is rarely practiced in Burundi. The results are confirmed by [24] who found similar results in his research, indicating that sweet potato processing into flour is very low in south-west Nigeria. The same author also confirms that flour is one of the final products, stressing that sun-drying is an essential aspect of the processing procedure.

For these types of surveys, the problem is that some respondents may not know certain parameters exactly, such as the cooking time for orange sweet potatoes, because they do not see the point in checking the cooking time each time. Others may take pleasure in showing the investigator that they consume a type of food that is highly regarded in the locality, even though they do not have the means to prepare it. However, it is necessary to conduct the survey because direct observation can also produce biased results. Surveys are also among the recommended methods, as direct observation can also produce biased results. Indeed, respondents may change their usual practices due to the presence of the evaluator during the observation [25].

5. Conclusions

This study highlighted the forms of preparation and consumption of Burundian rural households at low altitudes. It revealed that the most common methods of preparation were boiling (94.62%) and frying (46.75%). The majority of households surveyed eat OFSP cooked by boiling water (97.77%), and almost half of the population surveyed eat it in the form of fries (49.54%). This cooking process may affect differently the residual content of B-carotene since it brings material to a limited temperature in excess water content.

The level of preparation and consumption between these two products indicates a statistically significant difference (p-value < 0.05).

Households in the study area cook and consume the OFSP after peeling at a higher level (97.87%) than those who cook and consume the OFSP with the skin on (23.40%), and the difference was statistically significant (p-value < 0.05).

Regarding the production of flour, the majority of households (76.80%) have never performed this preparation, but 23.20% of the people surveyed have already transformed orange-fleshed sweet potatoes into flour, either by drying in the sun (16.20%) or in an open-air shed (7.00%).

The results of this study point the way to future research into whether or not the forms of preparation used by Burundian households preserve β -carotene in sufficient quantities to help prevent avitaminosis A.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Abewoy, D., Megersa, H.G., Banjaw, D.T. and Lemma, D.T. (2024) Major Nutritional

- Content of Orange Fleshed Sweet Potato (OFSP) and It's Importance: Review. *Global Academic Journal of Agriculture and Biosciences*, **6**, 1-7.
<https://doi.org/10.36348/gajab.2024.v06i01.001>
- [2] Rose, I. and Vasanthakaalam, H. (2011) Comparison of the Nutrient Composition of Four Sweet Potato Varieties Cultivated in Rwanda. *American Journal of Food and Nutrition*, **1**, 34-38. <https://doi.org/10.5251/ajfn.2011.1.1.34.38>
- [3] Oloniyo, R.O., Omoba, O.S. and Awolu, O.O. (2021) Biochemical and Antioxidant Properties of Cream and Orange-Fleshed Sweet Potato. *Heliyon*, **7**, e06533.
<https://doi.org/10.1016/j.heliyon.2021.e06533>
- [4] Hounkpatin, W.B.A. (2011) Evaluation du potentiel de couverture des besoins en vita-mine A des jeunes enfants à partir des sauces accompagnant les aliments de base consommés au Bénin. PhD Thesis, Montpellier 2. <https://theses.fr/2011MON20160>
- [5] Jason, J., Archibald, L.K., Nwanyanwu, O.C., Sowell, A.L., Buchanan, I., Larned, J., *et al.* (2002) Vitamin a Levels and Immunity in Humans. *Clinical and Vaccine Immunology*, **9**, 616-621. <https://doi.org/10.1128/cdli.9.3.616-621.2002>
- [6] Huang, Z., Liu, Y., Qi, G., Brand, D. and Zheng, S. (2018) Role of Vitamin a in the Immune System. *Journal of Clinical Medicine*, **7**, Article 258.
<https://doi.org/10.3390/jcm7090258>
- [7] Wafula, E., Malavi, D., Mbogo, D., Mwaura, L., Moyo, M. and Muzhingi, T. (2022) Proximate Composition and Vitamin a Contribution of Biofortified Orange Fleshed Sweet Potato Value Added Products. *African Journal of Food, Agriculture, Nutrition and Development*, **22**, 20215-20230. <https://doi.org/10.18697/ajfand.109.21605>
- [8] Nankumbi, J., Grant, F.K.E., Sibeko, L., Mercado, E., Kwikiriza, N., Heck, S., *et al.* (2023) Predictors of Vitamin a Rich Food Consumption among Women Living in Households Growing Orange-Fleshed Sweetpotatoes in Selected Regions in Uganda. *Frontiers in Public Health*, **10**, Article ID: 880166.
<https://doi.org/10.3389/fpubh.2022.880166>
- [9] Bouis, H.E. and Saltzman, A. (2017) Improving Nutrition through Biofortification: A Review of Evidence from Harvestplus, 2003 through 2016. *Global Food Security*, **12**, 49-58. <https://doi.org/10.1016/j.gfs.2017.01.009>
- [10] Jenkins, M., Byker Shanks, C. and Houghtaling, B. (2015) Orange-Fleshed Sweet Potato: Successes and Remaining Challenges of the Introduction of a Nutritionally Superior Staple Crop in Mozambique. *Food and Nutrition Bulletin*, **36**, 327-353.
<https://doi.org/10.1177/0379572115597397>
- [11] Low, J.W., Mwanga, R.O.M., Andrade, M., Carey, E. and Ball, A. (2017) Tackling Vitamin a Deficiency with Biofortified Sweetpotato in Sub-Saharan Africa. *Global Food Security*, **14**, 23-30. <https://doi.org/10.1016/j.gfs.2017.01.004>
- [12] Sebben, J.A., Trierweiler, L.F. and Trierweiler, J.O. (2016) Orange-Fleshed Sweet Potato Flour Obtained by Drying in Microwave and Hot Air: Orange-Fleshed Sweet Potato Flour. *Journal of Food Processing and Preservation*, **41**, e12744.
<https://doi.org/10.1111/jfpp.12744>
- [13] Hagenimana, V. and Low, J. (2000) Potential of Orange-Fleshed Sweet Potatoes for Raising Vitamin a Intake in Africa. *Food and Nutrition Bulletin*, **21**, 414-418.
<https://doi.org/10.1177/156482650002100414>
- [14] Low, J.W. (2018) Patate douce à chair orange. Votre passeport pour une bonne santé. https://cgspace.cgiar.org/bitstream/10568/106974/1/web_PASS-PORT%20Fourth%20edition_French%202020.pdf
- [15] Kamuna, I.B.K. and Tshibaka, R.N. (2022) Index glycémique et consommation ali-

- mentaire des variétés à chair blanche et orange de la patate douce (*Ipomea batatas*) par les diabétiques (Etude menée dans la ville de Kinshasa). *Revue des Sciences de la Sante*, **1**, 1-6. <https://doi.org/10.71004/rss.024.v1.i1.01>
- [16] Chepkwony, M.C., Abong, G.O. and Ngala, S. (2018) RUFORUM Working Document Series. 358-365. http://repository.ruforum.org/system/tdf/Chepkwony%2C%20M.C._0.pdf?file=1&type=node&id=39044&force
- [17] Sonia, C. and Jean, C. (2011) Polyphénols et procédés. Lavoisier.
- [18] Giezendanner, F.D. (2012) Taille d'un échantillon aléatoire et marge d'erreur. Instruction Publique, Culture et Sport Service Écoles-Médias, 22.
- [19] Cochran, W.G. (1977) Sampling Techniques. John Wiley & Sons.
- [20] Ndangui, C.B. (2015) Production et caractérisation de farine de patate douce (*Ipomea batatas* Lam): Optimisation de la technologie de panification. Ecole Nationale Supérieure d'Agronomie et des Industries Alimentaires, Laboratoire d'Ingénierie des Biomolécules, 151 p.
- [21] Badiane, M.A. (2019) Spécialité: Nutrition *et* Alimentation Humaine. PhD Thesis, Université Cheikh Anta Diop de Dakar. <https://larnah.ucad.sn/wp-content/uploads/2021/03/Badiane-2018.pdf>
- [22] Rocca-Poliméni, R. (2007) Contribution à la compréhension de la cuisson domestique sous pression de vapeur. Etude expérimentale et modélisation des transferts, de l'évolution de la texture des légumes et du fonctionnement d'un autocuiseur. PhD Thesis, AgroParisTech. <https://pastel.hal.science/pastel-00004560/>
- [23] Abidin, P.E., Mtimuni, B., Chipungu, F., *et al.* (2016) Rooting out Hunger in Malawi with Nutritious Orange-Fleshed Sweetpotato (OFSP). A Training of Trainers' Module for OFSP Processing. <http://www.sweetpotatoknowledge.org/wp-content/uploads/2016/01/Rev-Annex-2-Revised-3-DRAFT-Training-Manual-OFSP-Processing-TC14512-EA15512-2-NXPowerLite.pdf>
- [24] Fetuga, G.O., Tomlins, K., Bechoff, A., Henshaw, F.O., Idowu, M.A. and Westby, A. (2013) A Survey of Traditional Processing of Sweet Potato Flour for Amala, Consumption Pattern of Sweet Potato Amala and Awareness of Orange-Fleshed Sweet Potato (OFSP) in South West Nigeria. *Journal of Food, Agriculture and Environment*, **11**, 67-71.
- [25] Bourgeois, I., Buetti, D. and Maltais, S. (2023) La collecte et l'analyse des données d'évaluation. Fondements et pratiques contemporaines en évaluation de programmes. <https://ecampusontario.pressbooks.pub/evaluation/chapter/chapitre-6-la-collecte-et-analyse/>