



## Traditional Potato Food Types Preparation Practices and Farmer Reaction in Welmera and Ada Berga District, West Shewa, Ethiopia

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### Abstract

In most developing countries potatoes are consumed in fresh with some processing into chips and crisps. In Ethiopia there are only three type of potato processed products such as boiled or cooked product, wot and deep fried types. Principally, farmers in Ethiopia produce potato for fresh marketing and tubers seed sale. To diversify potato utilization, training on potato processing was held in two kebeles of Welmera and one kebele's of Ada Berga District for selected potato producing farmers group and cooperative members to promote potato processing and increase farmer's attitude towards potato production as well as to diversify the use of potato product and foods farmers use. The recipes done were Potato Pasta, Potato Kinche, Potato quanta, Potato starch, Potato crisp and chips, Genfo, Shiro wot, Chechebsa, Enjera, bread, Firfir (from mixture of meat and egg). These food types were found food which have good look, nutritious and pleasant. Use of potato in different food items raise the appetite of people and diversify food farmers' use. Farmers appreciated the food types prepared from potato. They recommended processing and promoting it through mass media (TV), radio and exhibition in town administration. In addition, the farmers appreciated the effort Holetta Research Center puts in providing new seed tubers together with its technology to producers and they asked to get continues support in the future time.

**Keywords:** Potato, Receipts, Chips, Crisp, Genfo, Enjera, Bread and Chechebsa.

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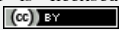
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**Ethical:** This study follows all ethical practices during writing.

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**Contribution of this paper to the literature**

This study is contributing to the existing literature by showing ways and the possibility of eating potato in different food items. It helps the food science to look at another potato food preparation procedures. It also raises consumer interest and price for producers. In addition, it helps to diversify the ways of eating potato product in different food items.

**1. Introduction**

Potato (*Solanum tuberosum* L.) is highly productive and well suited for all type of consumer. The demand for potatoes is increasing due to expanded diet diversity, requests for prepared food items, and a need for reasonably priced foods [1]. Potato consumption growth was also because of its wider range of climates adoption with broad range of cultures [2]. According to King and Slavin [2] potatoes played vital role in preventing starvation and malnutrition worldwide and is a source of income for developing world. Potatoes are packed with vitamins and minerals, although the nutritional content varied with variety and preparation method [3]. According to Ryan [3] potatoes can be processed in too many food items employing many preparation ways, including boiled, baked and steamed. Potato is eaten as boiled, baked, or fried and frequently served as a side dish or snack according to the description of Atli [4]. He also added the common potato-based foods and food products embrace french fries, potato chips, and potato flour. In most developing countries potatoes are consumed in fresh with some processing into chips and crisps. Potato can be processed into stable products which are used for food and industrial applications such as in textiles, starch, alcohol, glucose, paper and etc. Utilization in Ethiopia is restricted mainly in areas of production and in major cities where it is processed into chips and crisps. The usual mode of food preparation is by cooking such as boiling, roasting and deep frying. In Ethiopia there are only three type of potato processed products such as boiled or cooked product, wot and deep fried types. But in the research areas it can be processed in to 36 types of food in Ethiopia and more than 100 types of food in India (www.ficciagroindia.com/aic/post-harvest-mgmt/vegetables/potato.htm). Processing is transformation of the raw tubers into sweeter and more palatable product to enhance consumption. It is attractive alternative to sale in the fresh form since the bulkiness and persheability of potatoes can lead to cause marketing problem. Potato processing is very important to diversify use of potatoes and expand its market. Thus, continuous evaluation of new germ plasm and improvement of existing varieties has to be incorporated in utilization component and variety development strategies as education; marketing, breeding, field management, and finally preparation for consumption enhances its contribution to human nutrition [5]. In most cases, farmers in Ethiopia produce potato for fresh marketing and tubers seed sale. Due to the persheability of the product, fresh marketing fetch low income as result of high supply during harvesting. This forces farmers to have low profit and even throwing of the product near the market as they have limited chance of selling and consuming it in relation to bulkiness and high weight as well as difficulty to transport twice. Even in tuber seed sale the demand and supply are not fitting each other. There is chance of throwing these products in some years due to all cooperative and farmers group are producing the potato for this purpose regardless of the demand. Due to these reasons and others, promotion of potato processing in to different food types is a substitute less strategy to solve shortage of market, increase profit and diversify potato use. Based on these, training on potato processing was held in two kebeles of Welmera District and one kebele’s of Ada Berga District for selected potato producing farmers group and cooperative members to promote potato processing and increase farmer’s attitude towards potato production as well as to diversify the use of potato product and foods farmers use.

**2. Methodology**

Training was held in Tellecho and Burka Welmera Kebele of Welmera district and Bishan Dimo Kebele of Ada Berga District Table 1 in 2014 to prepare different cultural food of Ethiopian from Gudanie potato variety. Model potato producing farmers were selected by the help of Wereda and chair man of the farmer group/ cooperative members. The selected farmers were called to the kebele and the training was started with adequate general discussion about potato production and use for human economy and health, nutritional value as whole. Those recipes types done from raw potato such as: Potato Pasta, Potato Kinche, Potato quanta, Potato starch, Potato crisp and chips were done by trainers in front of farmers to indicate procedures how to prepare and the type of tubers to be used.

**Table-1.**The group numbers and members of the trainees group.

| Group number | Recipes prepared by the group | District     |               |             |
|--------------|-------------------------------|--------------|---------------|-------------|
|              |                               | Ada Berga    | Welmera       |             |
|              |                               |              | Burka Welmera | Telecho     |
| 1            | Pasta and Chechebsa           | 7            | 4             | 7           |
| 2            | Kinche and Genfo              | 7            | 5             | 6           |
| 3            | starch                        | 6            | 5             | 7           |
| 4            | Crisp and Shiro Wot           | 7            | 5             | 6           |
| 5            | Chips and Firfir with egg     | 7            | 5             | 7           |
| 6            | Quanta and Firfir with meat   | 7            | 6             | 8           |
| 7            | Enjera and bread              | 4            | 3             | 4           |
| Total        |                               | 45(male =23) | 33(male=14)   | 45(male=24) |

Source: Training trainee group and group member, recipes the trainee practice.

Following same procedures the remaining recipes: - Genfo, Shiro wot, Chechebsa, Enjera, bread, Firfir (from mixture of meat and egg) were done from boiled or cooked potato tubers. In between the recipes section there were important questioning and answering in order trainees internalize what they were told about the steps to be

followed to prepare each food type under issue. The next day the Trainee was grouped in to 7 groups with each of them 3- 8 numbers and given one or two type of food type in order they practice how to do it themselves under the supervision of the trainers [Table 1](#). The groups were made to present what they prepared and on the last general discussions were made for receiving their reaction about the training. The total recipes and group as well as group members were listed in [Table 1](#)



**Figure-1.** Food types done.

**Source:** Photo taken from recipes made during training.

Each of these food types had their own procedures [Figure 1](#). The procedures for foods made from raw potato were similar in which all of them share selection of appropriate quality and quantity. Then washing until the soil or mud completely removed and peeling the potatoes to remove outer hard cover. The other separate Procedures were:

**Potato Pasta:**-Peeled long potato tubers were cut using knife in to thin and long form or in pasta shape and cooked in the same procedure of pasta.

**Potato Kinche:** - Peeled potato was cut using knife in to pieces in similar size of Kinche of Barley, wheat or Oat and the ways of preparation is similar to the kwon table Kinche.

**Potato quanta:** - Peeled potato was cut using either knife or rubbing rough metal materials and dry in oven or sunlight until constant weight was achieved in order to pack it for future use.

**Potato starch:** - Peeled potato was rubbed with rubbing rough metal materials and soaked in water in the bucket for ten minute for settling. It is schussed in another bucket and again soaked for ten minute for schussing in the same manner as above. Socking and schussing was continued until clear water drops from schussing. The schussed liquid was stayed for 24hours again for settling and the water was carefully removed next day and dry the white dough found below the settlement from these process which is called starch after drying.

Tuber characteristics selected for processing into chips and crisps were shallow eyes bearing tubers, high dry matter containing, and long shape for chips and round for crisps as well as low reducing sugar concentrations.

**Crisp:** - Peeled potato was cut in circular or in diameter in thinner depth which is washed by clean water and put for partial drying. Then roasted in drier than chips in oil until golden color was developed.

**Chips:** - Peeled potato was cut in length or in longitudinally in not more than pencil thickness which is washed by clean water and put for partial drying. Then roasted in oil until golden color was developed.

Procedures for those food types made from cooked potato were sharing same procedures in which all involve selection of needed quality and quantities of tubers, washing and boiling to the required extent. Then the boiled and cooled potato tubers were peeled.

**Genfo:**- Peeled potato tubers were made cut in to pieces and grinded in to dough like structure which is placed in small boiled water and mixed and again cooked to 30 minute through continuous mixing. Then ready for eating after taken out of stove or fire and placed in dish by Deeping in central part for pouring boiled oil or butter together with salt, rade pepper and spices to get good flavor for eating.

**Shiro wot:**- Peeled potato tubers were made cut in to pieces and grinded in to dough like structure which is placed in cooked onion in oil and water, and mixed in order to again cooked to 30 minute through continuous mixing. Then ready for eating after taken out of stove or fire to gather with Enjera or bread after salting and spicing.

**Chechebsa:** - Peeled potato tubers were made cut in to pieces and grinded in to dough like structure which is mixed with dough made from durum wheat. As soon as possible mixing was completed; place all dough in baking materials through flattening for baking. It became ready for eating after cutting baked bread in to pieces and mixed with boiled oil or butter together with salt and spices

**Enjera:**-Yeast and teff flour was mixed with water first day and next day peeled potato tubers were made cut in to pieces and grinded in to dough like structure which is mixed with mixed dough. After making thinner by boiled water, Enjera was baked.

**Bread:** - Yeast and teff flour was mixed with water first day and next day peeled potato tubers were made cut in to pieces and grinded in to dough like structure which was mixed with mixed dough and baked in to bread.

**Firfir:** - Peeled potato was cut in to somewhat large size and added to cooked egg or Meat which was eaten together with Enjera or bread.

### 3. Result

The training was done on processing of Potato in to thirteen well adapted and commonly used food Types. These were Kinche, Pasta, Starch, Quanta, Chips, Kirps, Genfo, Chechebsa, Shiro wot, Firfir from meat and Egg, Enjera and Bread [Figure 2](#).



**Figure-2.** Food types prepared in the training.

Source: Photo taken from prepared recipes during taining.

1. **Kinche:** - is very important food in Ethiopia which was consumed mostly as breakfast. It is previously made from Barley, wheat and Oat. In these training, it was done from potato and it was found very delicious food. The Figure-3 below show the photo of Kinche made from Potato.



**Figure-3.** Photo of Kinche made from potato.

Source: Taining Photo graph.

2. **Pasta:** - is previously made from wheat and it is a common food in Ethiopia. The past made during training from potato was found very nutritious and pleasant. Figure 4 shows the exact photo of pasta of potato.



**Figure-4.** Pasta done during training.

Source: Photo graph of Pasta taken during training.

3. **Starch:** - was made from potato during training. It is small in weight due to small amount of potato were used to prepare it. Starch made from potato was similar to bulla of Enset. It is used for Enjera, bread and Shiro wot, and typical food of Ethiopian people called Mucku. It can be packed in plastic bag and stored in dry and cool areas for long time. This type of processing is one way of preserving potato for long period of time.
4. **Quanta:** - was also done from potato during the training. Previously Quanta were done from meat as Ethiopian cultural food preservation through drying the meat after cutting meat in to long thinner thickness by the help of air or smoking. This quanta from meat was used as food either directly or after processing it in to food type it fit. But, quanta of potato consumed after processing it and were a means of preservation for potato product/tuber which have short shelf life. This food was found very nutritious and pleasant. The food done during training from quanta of potato was shown below in Figure 5.



**Figure-5.** Potato Quanta food done during the training.

Source: Photo graph of Quanta taken during training.

- 5. Chips:** - is the best well known processed food of potato worldwide. In Ethiopia, the ways of processing potato in Chips was not well known except recently started in big towns and Hotels. In the trainings the Chips done was very pleasant and easy to prepare by any individual household people in Ethiopia. It can be also one area of work for source of income for low living farmers. **Figure 6** show the exact photo of Chips prepared in the trainings.



**Figure-6.** Chips made from potato in the training.

Source: Photo graph of Chips taken during training.

- 6. Crisps:** - is the best well known processed food of potato worldwide. In similar manner as chips, in Ethiopia the ways of processing potato in to Crisps was not well known except recently started in big towns and Hotels. In the trainings the Crisps done was very pleasant and easy to prepare by any household individual people in Ethiopia using available resource and knowledge. It can be also one area of work for source of income for low living farmers. Chips and Kirps are similar except tuber shape selected, ways of cutting potato and extent of frying. **Figure 7** show the exact photo of Crisps prepared in the trainings.



**Figure-7.** Crisps made from potato in the training.

Source: Photo graph of Crisps taken during training.

The others food types prepared were foods done from well cooked potato. These food types were the commonly eaten food in Ethiopian country feeding habit in most cases. These foods were Genfo, Chechebsa, Shiro wot, Firfir from meat and Egg, Enjera and Bread.

- 7. Genfo:** - is commonly made in Ethiopia from flour of teff, barley, wheat and maize. But in the training it was made from potato and it was found sweeter and pleasant. **Figure 8** indicates the exact photo of Genfo made from potato during the training.



Figure-8. Genfo made from Potato.

Source: Photo graph of Genfo taken during training.

8. **Chechebsa:** - is an important cultural food of Ethiopian peoples. It is formerly made from cereals. In the training it was made from equal sized mixture of potato dough and durum wheat flour dough. This type of Chechebsa was found sweeter and pleasant than commonly known one. Figure 9 indicates the exact photo of Chechebsa made from potato during the training.



Figure-9. Chechebsa made from potato during the training.

Source: Photo graph of Chechebsa taken during training.

9. **Shiro wot:** - Is commonly prepared from bean and pea in Ethiopia. In the training it was made from potato in the manner of work procedure of shiro wot previously prepared from flour of bean and pea. It was found sweeter, pleasant and easy to work than the previous one. Figure 10 indicates the exact photo of Shiro wot made from potato during the training.



Figure-10. Shiro wot made from potato during the training.

Source: Photo graph of Shiro Wot taken during training.

10. **Fir fir from mixture of Potato and meat, Potato and Egg:** - This type of food was made from well cooked potato which was peeled and sliced into small size which was mixed with either of cooked egg or cooked meat. This food type was found very advantageous in which potato increased amount of food and give good flavor. As potato addition increases dry matter the mixture can have importance for human body and economy. The biological value of mixture of egg and potato is higher than the egg alone. Hence, potato can be supplement of meat and milk products for improving their taste, lowering energy intake and reducing food cost. Figure 11 indicates the exact photo of this type of made from potato during the training.



Figure-11. Meat and potato mixture, potato and egg mixture foods done during the training.

Source: Photo graph of Meat and Egg mixed Firfir taken during training.

**11. Enjera and Bread:** - commonly made from cereals especially durum wheat for bread and teff for Enjera. In the training the two were made from Potato dough and teff for Enjera and durum wheat for bread by equal size mixture. They were found very nutritious and pleasant. **Figure 12** indicates the exact photo of Enjera and bread made from potato during the training.



**Figure-12.** Photo of bread and Enjera made from potato during the training.

Source: Photo graph of Bread and Enjera taken during training.

#### 4. Discussions

Food types made during training were found food which have good look, nutritious and pleasant which is similar with description given for potato in **Ryan [3]** as described potatoes healthy, delicious and versatile. These food types made would require shorter procedures, time, cost and labor to prepare them when compared to other relevant locally known food types. Use of potato in different food items raise the appetite of people and diversify food farmers' use. It helps to get same product with different ingredients due to additives' difference. It also facilitate utilization of potato product contribution to development as these product have high energy, useful protein which involved in cell growth and amendments, vitamins and minerals which promote health achievements of individual person and the country as the whole. Because of the dry matter, edible energy and edible protein content of potato, it is found nutritionally superior vegetable as well as staple food not only in our country but also throughout the world which have to be converted in to individual house hold and country food achievements. Being a short duration crop, it produces more quantity of dry matter, edible energy and edible protein in lesser duration of time than cereals like rice and wheat. Hence, potato may prove to be a useful tool to achieve the nutritional security of the nation due to high return compared to other crops per unit area and time. The protein of potato has high biological value than proteins of cereals and even better than that of milk. This means it has higher amount of protein used for body growth and maintenance than others from taken in whole amount of protein [2]. Based on variety or cultivar grown the biological value of potato is 90-100 while it was 100 for whole egg and 84 for soybean and 73 for legumes [6]. According to **Hampson [7]** the protein value of potato is higher than protein value of any plant protein heavily eaten. The biological value of mixture of egg and potato is higher than the egg alone. Hence, potato can be supplement of meat and milk products for improving their taste, lowering energy intake and reducing food cost. In nutritional point of view, potato is a wholesome food and deserves to be promoted as a potential high quality vegetable food crop in the country.

Farmers' attitude about the training and their recommendation: Farmers appreciated the food types prepared from potato during the training. They promised to use potato products as their back bone of their economy. In the past they were throwing potato tubers when they loss markets. Due to this, their interest and attitude weakened to produce potato as they did not know different ways of eating it and the function of food prepared from potato as well. They recommended that if potato have these importances and can be eaten in these different food types, its processing has to be promoted through mass media (TV), radio and exhibition in town administration. In addition the farmers appreciated the effort Holetta Research Center puts in providing new seed tubers together with its technology to producers and they asked to get continues support in the future time.

#### References

- [1] Food and Agriculture Organization, *Food and agriculture organization plant production and protection division*. Rome, Italy: Food and Agriculture Organization of the United Nations, 2008.
- [2] J. C. King and J. L. Slavin, "White potatoes, human health, and dietary guidance," *Advances in Nutrition*, vol. 4, pp. 393S-401S, 2013. Available at: <https://doi.org/10.3945/an.112.003525>.
- [3] R. M. R. Ryan, "7 health and nutrition benefits of potatoes. Written by Ryan Raman, MS, RD. The Epoch Times." Available: [https://m.theepochtimes.com/7-health-and-nutrition-benefits-of-potatoes\\_2471127.html](https://m.theepochtimes.com/7-health-and-nutrition-benefits-of-potatoes_2471127.html), 2018.
- [4] A. Atli, "Potatoes 101: Nutrition facts and health effects, Written by Atli Arnarson, PhD." Available: <https://www.healthline.com/nutrition/foods/potatoes>, 2019.
- [5] K. M. Kolasa, "The potato and human nutrition," *American Potato Journal* vol. 70, pp. 375-384, 1993.
- [6] M. E. Camire, S. Kubow, and D. J. Donnelly, "Potatoes and human health," *Critical Reviews in Food Science and Nutrition*, vol. 49, pp. 823-840, 2009. Available at: <https://doi.org/10.1080/10408390903041996>.
- [7] C. Hampson, "Nutritional value of potatoes," *Nutrition Bulletin*, vol. 3, pp. 299-309, 1976.

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