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Research Article

Tikhur Powder Preparation by Sedimentation and Their Effects in Its Attributes

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ABSTRACT

The present study was designed to investigate effects on number of sedimentation on various attributes of tikhur powder. This powder was obtained after sedimentation process in traditional processing. During tikhur powder extraction process the sedimentation of tikhur paste was observed to be a critical component in the tikhur processing. After decantation of water tikhur powder attribute like starch, fat, protein, fiber, and ash content were recorded. Acidity of powder was decrease with increasing no. of sedimentation-decantation. Some physical properties like bulk density and angle of repose significantly deviated during the experiments. Also attempts were made to data analyzed by statistical methods.

Key words: *Tikhur, Curcuma angustifolia, Properties, Sedimentation and attributes of tikhur powder.*

INTRODUCTION

Tikhur (*Curcuma angustifolia* Roxb.) is a herb with medicinal properties. It is endemic to India, found in moist deciduous sal and mixed forest of Madhya Pradesh, Chhattisgarh, Jharkhand and West Bengal[11,4,9]. It is also known as, East Indian Arrow Root in English, Tavaksira in Sanskrit. *Tikhur* in Hindi. Different parts of the plant has also been taken by mouth as a dietary aid in gastrointestinal disorders, and applied on the skin to soothe painful, irritated, or inflamed mucous membranes[10,8,3]. Medicinally, it is a cardiac tonic, diuretic, antipyretic, dysentery, fever and reduces burning sensation[7,6]. A drink including C. angustifolia as an ingredient is also used as a replacement of breast-milk, or as a nutritional supplement for babies a short while after weaning. *Tikhur* rhizome is edible and affluent in starch content[11,1]. This is used in the preparation of many products such as burfi, milk shake, jalebi and halwa at domestic level especially during vratas (fastenings) and celebrations.

The edible rhizome rich in starch content is processed to obtain *tikhur* flour. The bitterness of the starch powder was found to be decreased with the increasing number of sedimentation. This indicates that the water soluble compounds including the acid are responsible for the typical bitterness.

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The washing/sedimentation of the paste was observed to be a critical component in the *tikhur* processing and requires skillfulness of the worker. The present study has been carried out to know changes of physico-chemical properties of *tikhur* flour after each decantation.

MATERIAL AND METHODS

The study was conducted at SG College of Agriculture and Research Station, Jagdalpur and Department of Agricultural Processing and Food Engineering during the winter 2010-2011. The method of extraction of powder from the *Curcuma angustifolia* rhizomes is follows: The Fresh *Curcuma angustifolia* bulbs were collected and washed it thoroughly with water and clean by removal of roots. The cleaned rhizomes were separated in finger and mother rhizomes. Both separated rhizomes were passed through the cruser or manually cruse. The obtained paste was passed though muslin cloth after mixing of same quantity of water. The penetrated mixture of water and powder collected in the Mataka (earthen pot) for more yield and kept for sediment of starch particles for 4-6 hour. The residue is washed repeatedly until the colour of the residue becomes pure white. The white powder (residue) was dried through sun drying for 7-8 hours till it was completely dry.

The determination of various physical properties of fresh rhizome and freshly prepared *tikhur* powder was done using standard techniques. Extracted powder of each decantation of eight were studied for Moisture, Fat, Protein, carbohydrate, Acidity, Ash value, Bulk Density and Angle of repose. The moisture, ash, the total carbohydrate content was determined using procedures specified in A.O.A.C.[2]. The titeratable acidity of *tikhur* powder was determined as per the procedure of Ranganna[5]. Protein of the *tikhur* powder was determined by Kjeldahl method. The fat content was determined by the Soxhlet method. Bulk density was determined by filling a measuring cylinder of 100ml with *tikhur* powder by pouring it form a certain height, striking off the top level and weighing the contents on a balance. The ratio of weight of the sample and volume occupied by it is expresses as the bulk density. The frictional forces in a loose powder can be measured by the angle of repose, ϕ. This is the maximum angle possible between the surface of a pile of powder and the horizontal plane. The powder mixture was allowed to flow through the funnel fixed to a stand at definite height. The angle of repose was then calculated by measuring the height and radius of the heap of powder formed.

RESULTS AND DISCUSSION

The effect of number of sedimentation or the washing on different attributes of this powder is presented in Fig 1-3. The Fig.1 reveals that bulk density of the starch powder gradually increases with the increase in number of sedimentation. This may be due to the variation in particle size with respect to number of sedimentation. The voids might have been reduced causing slight increase in the bulk density.

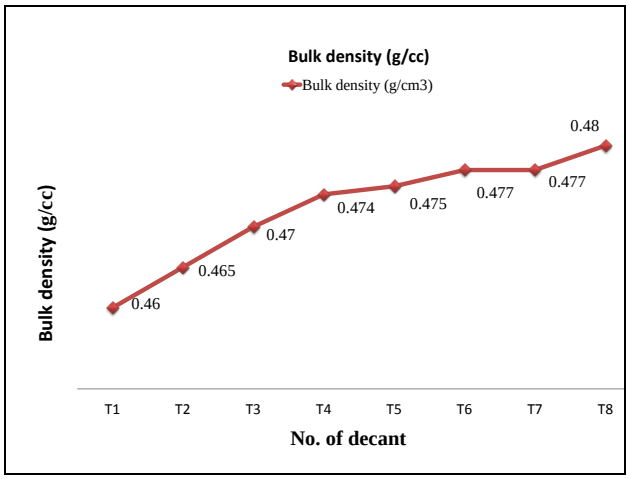

Fig. 1: Variation of bulk density with decant

The pH of the decanted water was found to be gradually increased with the increase in the number of decantation. This was obvious that while soaking the soluble acid might have been dissolved with the soaking water causing decrease in the acidity. The angle of repose of the starch powder was increased indication difference in particle size; however, this increase was not appreciable (Fig.2). The acidity was reduced from 0.52 to 0.324 indicating loss of acidity in the sedimentation water.

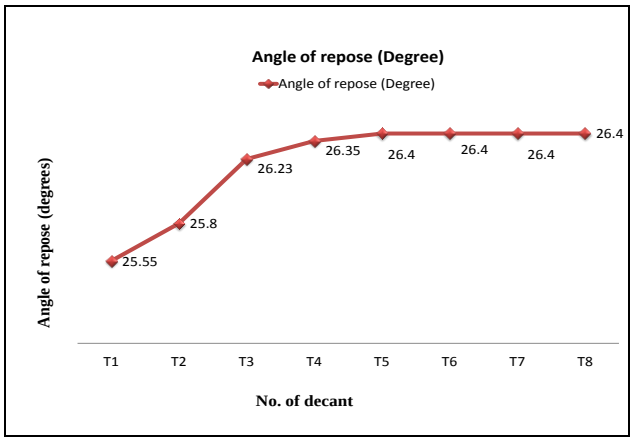

Fig. 2: Variation in angle of repose (degree) with decant

Fiber content was also decreased from 3.068 to 3.048 which were not at all appreciable. The moisture content of the starch powder increased with the number of washing. This may be because of improper drying of the sample. There was no appreciable variation in the carbohydrate, protein fat, fiber and ash. This indicates that there was no loss of valuable component of the starch.

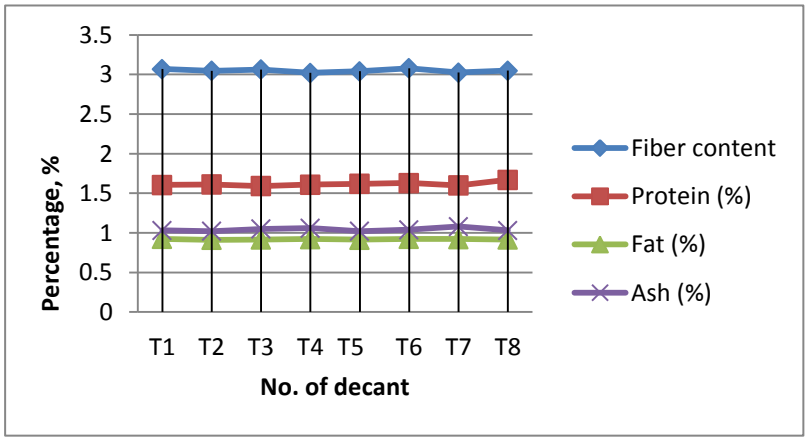

Fig. 3: Variation on fiber, protein, fat, ash percentage with decant

The colour was also found to be unchanged rather there was increase in the brightness. After eighth washing the colour of the starch was very bright.

The washing/sedimentation reduced the acidity of the starch which was helpful in reducing the bitterness of the starch. No other constituent of the starch was found to be affected by the increased number of sedimentation or washing. The number of washing experimented chosen was eight but it needs further refinement and optimization and time of sedimentation also need to be studied.

CONCLUSION

Tikhur powder is a good source of carbohydrate, which make available for various value added products. It has been observed that eight sedimentation process is sufficient to found whitish color and bitterness compound removed totally. After this also found significant amount of fiber and protein. Increasing the number of sedimentation process is tedious and it's need to be replace by some other technique like centrifugation and other chemical methods.

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