Value-added Products from Jackfruit and Papaya for Food Security and Sustainable Development

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Jack trees are seen in India, Bangladesh, Malaysia, Myanmar, Srilanka, Indonesia and Philippines in Asian region and they are also seen in western forests of Africa, northern part of Australia and also in the states of Florida and California in USA.

A survey conducted at IRTC on jackfruit availability in Kerala revealed that around 2.5 million tons of jackfruit is produced annually in Kerala of which around 30% is getting wasted due to various reasons like difficulty involved in plucking the fruit from tall trees and the time consumed in processing the same. Jackfruit is seasonal.However papaya is a perennial fruit.

Materials and Methods

Jackfruit and papaya which are the major raw materials are plenty available locally. Ingredients like sugar, jaggery, vinegar etc. are purchased from local markets. Digital refractometer was used for measuring the concentration of sugar in the sugar solution (Brix unit). Jackfruit pulping was done in a pulper for making jackfruit toffee. Tray drier with air flow at controlled temperatures (50^0, 60^0, 70^{0}C) was used for drying the products.

Analysis of fruits for their sugar and fibre content was carried out by wet chemical analysis using standard Techniques[1] and calcium content estimated by atomic absorption spectrophotometer (Elico Model SL243).

Steam sterilization and osmotic dehydration techniques were employed during the processing of these fruits[2,3].

Results and Discussion

Jackfruit and papaya are rich source of vitamins and minerals. Steam sterilization which is done to arrest enzyme action as well as to preserve the texture.Osmotic dehydration is effectively used in preparing some of the products (jackfruit snack and tutti-frutti).This is a processing step used for partial removal of water from plant tissues by immersion in a hypertonic (osmotic) solution.Process details of some of the products are indicated below.

Dried Jackfruit Powder

Deseeded bulbs –> cut into required size –> steam blanched –> dried-pulverised packed (This powder can replace "Atta" by 25% which makes chapati, poori etc. more tasty and palatable).

Jackfruit toffee

Deseeded ripe and sweet jackfruit–>pulped –> mixed with jaggery and corn flour-heated over a flame for uniform mixing –> the thick viscous mass spread in a tray drier –> dried at 60^{0}C for 12 hrs–> cut into toffee shape and packed

Jackfruit biscuit

25% of maida is replaced by jackfruit powder –>mixed with egg butter and sugar –> kneaded thoroughly–> cut into shapes –> baked at 160^{0}C for 28 minutes.

Papaya tutti-frutti

Raw papaya–>cut into 0.5 cm cubes –> kept in 1% $CaCl_2$ solution for 3 hours –> strain and wash thoroughly subjected to osmotic dehydration first at 40^{0}Brix solution and increase sugar concentration to 70^0 Brix –> Strain the cubes –> dried in a hot air oven for 6-8 hours. It is a ready-to-eat snack.

Jackfruit Powder

Jackfruit Toffee

Papaya Tutti-frutti

Shelf life studies:

Product	Shelf life
Jackfruit Powder	**1 year** (under room temperature)
Jackfruit Toffee	**6 months** (under refrigeration)
Tutti-frutti (without preservatives)	**3 months** (under refrigeration)
Jackfruit biscuits	**2 months** at room temperature

All the above products are tasty and healthy. These Studies indicated that have reasonably good shelf life.The dietary fibre content in ripe Jackfruit was 1.5-1.7% and the calcium content were found to be 0.02%.Regular trainings are conducted at IRTC to impart the knowledge to entreprenuers.

Results

Procedures and flow sheets for the production of jackfruit powder, jackfruit based toffee, biscuits, pickle, osmotically dehydrated sweetened jackfruit and papaya snacks (tutti-frutti) have been standardised. Jackfruit powder can replace 'Atta' by 25% which makes chapati and poori extremely soft and palatable. Papaya tutti-frutti is a healthy snack for everybody-both children and elderly equally well.

Jackfruit Biscuits /Cookies

Conclusion

This work established the possibility of popularising nutritive and fibre rich Jackfruit and papaya products with no added preservatives and colours.

References

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