

DIABETIC FRIENDLY COOKIES

“Snacks can be part of a healthy meal plan and a great source of quick energy. They help prevent hunger between meals and overeating at meal times.”

India, the world's second most populous country, now has more people with type 2 diabetes (more than 50 million) than any other nation. With India having the highest number of diabetic patients in the world, the sugar disease is posing an enormous health problem in the country. Calling India the diabetes capital of the world, the International Journal of Diabetes in Developing Countries says that there is alarming rise in diabetic patients in India. WHO fact sheet on diabetes (yr. 2004), estimated around 3.4 million deaths due to the consequences of high blood sugar. WHO also estimates that 80 per cent of diabetes deaths occur in low and middle income countries and projects that such deaths will double between 2005 and 2030.

It is known that having healthy snacks between main meals will help maintain the glucose levels in diabetic patients. Cookies made with Neera Jaggery is fit for this purpose since it's GI is very low (GI 35). Diabetic friendly cookies are made with whole wheat, desiccated coconut or grated coconut and neera jaggery. Different types of cookies are possible with varied main contents like oats, multigrain, arrow root, corn, whole wheat and spices.

Neera Jaggery is derived from the sap of coconut inflorescence sap. It has been used as a traditional sweetener for centuries in regions where coconut trees flourish, such as South East Asia. It is superior to cane jaggery in respect of GI and nutritional parameters like amino acids, vitamin B complex and minerals.

One of the biggest attraction of Neera and it's value added products are its low glycemic index score of 35, which is comparable to most fruits and vegetables. Consequently, these products have little impact on blood sugar levels, making it suitable for diabetics, pre-diabetics and anyone else who wants to avoid blood sugar spikes. Most other sugar substitutes, including maple syrup and honey, have a high GI score of 69 or more, while refined sugar itself can often reach 90s!

Recipe (for 15kg or 1000 cookies)

Ingredients:

- | | | |
|---|---|----------|
| 1. Wheat flour | - | 5.00kg |
| 2. Butter | - | 3.25kg |
| 3. Jaggery (Powdered) | - | 5.00kg |
| 4. Grated coconut/Desiccated coconut powder | - | 1.87kg |
| 5. Baking powder | - | 0.200kg |
| 6. Vanilla essence | - | 0.100kg |
| 7. Salt | - | Adequate |

Process:

1. Grated coconuts are dried in the oven for 30 minutes and then it is grinded with the help of a mixer. Otherwise desiccated coconut powder can be used directly.
2. Wheat flour is sieved. Into that adequate salt is added. This mixture is blended evenly in a dough mixer. There are two types of mixers available. (1) Planetary mixer (2) spiral mixer
3. Creaming of butter is done with the help of a hand mixer or beating machine. Essence is added into this cream of butter and is mixed well.
4. Flour, grated coconut and jaggery powder are added and knead softly to make dough with the help of planetary/spiral mixer.
5. In case of small scale production, the dough is rolled to 1 cm thickness and cut into desired shape preferably with a cookie cutter. If the production is in large scale, Cookies wire cut machine/ cookies drop machine can be used
6. The cut pieces are kept in a greased tray and bake in preheated oven (180C for 15-20 minutes) until pale brown color is obtained.
7. Cookies are cooled and packed in suitable packing material.

Nutritional Information

Sl.No	Parameters	Per 100g (%)
1	Carbohydrate	38.85
2	Protein	6.86

3	Fat	40.90
4	Minerals	0.28
5	Fibre	2.51



Planetary mixer



Cookies drop machine

Draft plan to set up a plant for Neera Cookies

Basic assumptions:

1. Capacity of plant = 40 kg of cookies (2700 cookies) per shift
2. Cost of ingredients/ cookie = Rs. 3.55/-
3. Selling price of cookies = Rs. 85/ packet of 7 cookies

No	Item	Amount (Rs. in Lakhs)
1	Land (10 cents)	Leased
2	Building (2000 sq. feet @ Rs. 1000/sq. feet)	20
3	Other civil works (internal roads, compound wall, water tanks+ neera jaggery making unit)	2
4	Machinery and Equipment	13.49
5	Electrification	0.50

6	Preliminary & Pre-op Expenses	1.11
7	Working Capital margin	0.90
	Total	38.00

Cost sheet:

Particular	Expenses/ pouch (Rs)
Operating expenses	40.80
Administrative expenses	0.11
Sales & distribution expenses	21.25
Total cost of good sold	62.14
Selling Price	85
Margin	22.86

Plant and Machinery:

No.	Item	Qty	Unit	Unit Cost (Rs.)	Amount (in Lakhs)
1	Planetary mixer	1	No.	2.5	2.5
2	Cookie wire cut machine/ Cookie drop machine	1	No.	5	5
3	Baking trays	1	No.	0.05	0.05
4	Hot air oven	1	No.	2.5	2.5
5	Packing unit	1	No.	2.5	2.5
6	SS working table	2	No.	0.12	0.24
7	Trolleys	2	No.	0.25	0.5
8	Miscellaneous				0.2
	Total				13.49

Project at a glance:

No.	Item	3rd year
1	Sales Realization	Rs 78.69 lakhs
2	Net Profit after tax	Rs. 13.53 lakhs
3	Long Term Debt	Rs. 9.12 lakhs
4	Net Profit after tax on Sales	17.20 %
5	Debt Service Coverage Ratio(DSCR)	2.89
6	Pay Back Period	3 yr 10 months
7	Internal Rate of Return (IRR)	19%
8	Break Even Point (sales)	60.96%

Bakery Machinery suppliers

Sl. No	Address	Contact details
1	Mutchall Engineering Pvt Ltd, No: 140 A &140 B, Kandlakoya village, Sai geetha ashram road, Medchal mandal, Hyderabad	09849036306 07569634555 09963028643
2	Goodlife Technologies Pvt Ltd, A-20, Sector-58, Noida - 201301	9910206788 9810408386
3	Empire products, Opp. Gurudwara sumasar sahib, Tibba P O, Sahnewal, Ludhiana-141120	9872490466
4	Pritul machines, UPSIDC Industrial area, Begrajpur, Muzaffarnagar, UP	pritul@pritul.com

Photos of diabetic friendly cookies developed by CDB Institute of Technology



Photos of coconut biscuits available at market

