

A Clinical Study on Comparing the Efficacy of Areca Catechu Mother Tincture with Areca Tea in Control of Blood Sugar Level Among Healthy Individuals

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Abstract

Areca tea of Nivedan Nimpe is trending among diabetic group as preventive and curative diet. Areca Catechu is one of the Indian homoeopathic drugs. There is no authentic literature source to indicate the action of Areca against diabetes, so authors have investigated immediate action on blood sugar level among healthy individuals. Selection of volunteers was done on the basis of inclusion and exclusion criteria. Volunteers were randomly divided into three groups—study group had 25 volunteers, positive control group had 10 volunteers (Areca tea), and negative control group had 10 volunteers (without medicine). The differences between the three groups were not found to be significant after statistical analysis, using repeated measure ANOVA.

Keywords: Areca Catechu, Areca tea, maceration, percolation, quality analysis

INTRODUCTION

Diabetes mellitus is one of the most common chronic diseases of the globe. Prevalence of diabetes mellitus has risen from estimated 30 million cases in 1985 to 177 million in 2000 and 366 million cases in 2011 [1]. Based on current trends, over 552 million individuals will have diabetes mellitus by the year 2030 [2].

Mr. Nivedan Nimpe is the patent holder of Areca tea prepared with areca seeds, which is clinically claimed to control diabetes mellitus [3].

Areca Catechu is one of Indian homoeopathic drug which was introduced by Dr. William Boericke in the year 1927 [4]. The drug was partially proved to be effective in the treatment of helminthiasis, glaucoma, myopia [5], salivation and tapeworm infection [6]. But no homoeopathic literature throws a light into its anti-diabetic action.

In the present study, authors investigated the immediate action of Areca catechu mother tincture prepared by maceration [7] on blood sugar level among healthy individual in comparison with Areca tea.

MATERIALS SOURCE

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- Areca catechu mother tincture was prepared from Areca at the Department of Pharmacy, Alva's Homoeopathic Medical College, Mangaluru, Karnataka, India according to the Homeopathic Pharmacopeia of India (HPI).
- Areca tea was brought from local vender without flavor.
- Glucometer (OneTouch) was utilized from Alva's Homoeopathic Medical College & Hospital, Mangaluru, Karnataka, India.

METHODS

- Ethical committee clearance was obtained from the institutional ethical committee prior to initiation of the work.
- Selection of volunteers was based on inclusion and exclusion criteria after obtaining informed consent. Those volunteers who satisfied the inclusion criteria were included in the study.
- The volunteers were randomly divided into three groups:
 - Group A – Negative control group.
 - Group B – Positive control group.
 - Group C – Study group.
- The Random blood sugar level of the volunteers was recorded after gap of 30 min from breakfast as T₀.
- The Areca mother tincture was administered to the study group (Group C) in the form of water dose—12 drops of mother tincture were added to 100 ml of water for the study group.
- One bag of Areca tea was added to 100 ml of water and administered, for positive control group (Group B).
- For negative control group (Group A), 12 drops of rectified spirit was added to 100 ml of water and administered. After administration, the blood sugar level was recorded after 1 hour and 2 hour as T₁ and T₂, respectively, by using Glucometer. The data thus obtained from 45 volunteers were tabulated under Tables 1–3 representing Groups A, B and C, respectively [8].

Sampling

- Purposive sampling

Inclusion Criteria

- Apparently healthy individuals.
- Volunteers with normal range of blood sugar level.
- Age group: 18–40 years.

Exclusion Criteria

- With any underlying disease.
- On any medication.

RESULT AND DISCUSSION

The blood sugar level of negative control group (Group A), positive control group (Group B) and study group (Group C) were tested individually and tabulated as Tables 1–3, respectively.

Table 1. Blood sugar level of negative control group (Group A).

S.N.	Volunteer	InT ₀	InT ₁	InT ₂
1	V ₁	132	126	79
2	V ₂	142	138	105
3	V ₃	128	117	112
4	V ₄	180	128	140

5	V ₅	149	105	96
6	V ₆	90	100	82
7	V ₇	131	100	82
8	V ₈	89	94	83
9	V ₉	123	83	84
10	V ₁₀	108	97	91

Table 2. Blood sugar level of positive control group (Group B).

S.N.	Volunteer	InT ₀	InT ₁	InT ₂
1	V ₁	95	91	82
2	V ₂	120	94	85
3	V ₃	94	89	87
4	V ₄	94	139	87
5	V ₅	78	86	87
6	V ₆	86	85	65
7	V ₇	87	87	83
8	V ₈	94	77	78
9	V ₉	137	83	72
10	V ₁₀	137	83	75

Table 3. Blood sugar level of study group (Group C).

S.N.	Volunteer	InT ₀	InT ₁	InT ₂
1	V ₁	123	98	90
2	V ₂	131	105	89
3	V ₃	101	111	98
4	V ₄	135	116	120
5	V ₅	111	95	97
6	V ₆	129	111	111
7	V ₇	148	116	92
8	V ₈	101	98	100
9	V ₉	159	130	96
10	V ₁₀	107	89	90
11	V ₁₁	160	123	118
12	V ₁₂	136	102	98
13	V ₁₃	100	112	93
14	V ₁₄	147	122	108
15	V ₁₅	107	113	118
16	V ₁₆	126	106	100
17	V ₁₇	105	98	92
18	V ₁₈	124	102	94
19	V ₁₉	152	142	110
20	V ₂₀	178	113	113
21	V ₂₁	125	93	103
22	V ₂₂	124	93	111
23	V ₂₃	138	86	94
24	V ₂₄	100	125	113
25	V ₂₅	131	153	119

Table 4 indicates the average value of the groups' pre-test, mid-test and post-test whereas Table 5 indicates the post-hoc test comparison between the groups.

The results on statistical analysis stated that there was a significant difference between the groups when time was used as an independent variable. But the significance was lost when the comparison was made between the control and study groups. This lead to the acceptance of null hypothesis, that is, Areca tea does not show significant reduction in the blood sugar level among healthy individuals immediately.

Table 4. Descriptive statistics of the obtained data [9].

S.N.	Pre-test	Mid-test	Post-test
1	127.2 ± 27.38	108.8 ± 17.56	95.4 ± 19.11
2	102.2 ± 21.26	91.4 ± 17.36	80.1 ± 7.47
3	127.9 ± 21.26	110.0 ± 16.23	102.6 ± 10.3

Table 5. Post-hoc test: Multiple comparisons.

	Category (I)	Category (J)	Lower bound	Upper bound	Sig.
Turkey HSD	1.00	2.00	4.6266	33.8400	0.007
		3.00	-15.3142	9.1275	0.813
	2.00	1.00	-33.8400	-4.6266	0.007
		3.00	-34.5475	-10.1058	0.00
	3.00	1.00	-9.1275	15.3142	0.813
		2.00	10.1058	34.5475	0.000
Scheffe	1.00	2.00	3.9761	34.4906	0.010
		3.00	-15.8584	9.6718	0.828
	2.00	1.00	-34.4906	-3.9761	0.010
		3.00	-35.0918	-9.5616	0.000
	3.00	1.00	-9.6718	15.8584	0.828
		2.00	9.5616	35.0918	0.000
LSD	1.00	2.00	7.1001	31.3665	0.003
		3.00	-13.2447	7.0580	0.542

CONCLUSION

The post-hoc test provides the understanding that Areca mother tincture does not significantly reduce the sugar level immediately on administration in comparison to negative control group whereas Areca tea does. This kindles a thought that probable cause of immediate significant reduction of blood sugar level is possibly due to some other content of Areca tea and not Areca itself. Further studies are required to investigate the action of Areca in long run to reduce the blood sugar level.

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