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Intervention And Effect Of Coconut Water On Dengue Patients

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Abstract: ***Coconut water is actually the juice present inside the interior cavity or endosperm of young, tender coconut. Its water is one of the nature's most refreshing drinks, consumed worldwide for it's nutritious and health benefiting properties. Vitamins, minerals, amino acids and phytohormones are present in coconut water. Coconut water contains vitamins B1, B2, B3, B5, B6, B7 and B9. Minerals such as potassium, sodium, calcium, phosphorous, iron, copper, sulphur and chlorides are present in coconut water. Potassium rich tender coconut water.***

Dengue infection is one of the most common mosquito-borne infections caused by Flaviridae. An electrolyte disturbance takes place in dengue infection. Sodium is an essential nutrient in humans; regulate blood volume, blood pressure, Osmotic equilibrium and PH. Hypornatremia is defined as a serum Sodium level < 130 mEq/l. Hypornatremia is frequent in Dengue hemorrhagic fever (DHF), especially in shock patients. Dengue viral infection led to acute neuromuscular weakness due to hypokalemia.

A study was done at Sahara Hospital Lucknow, U.P. in which 300 cases of dengue patient was selected and it is find out that the biochemical parameter of dengue patient was imbalanced like sodium, potassium, chloride etc. patient had been suffering from fever, vomiting and nausea so there was intervene the coconut water to the dengue patient. 250 ml coconut water thrice in a day given to the patient and it is find out that after taking the coconut water patient electrolytes are balanced and also increased the appetite.

Keywords: Flaviride, electrolyte disturbance, hyponatremia, hypokalemia.

I. INTRODUCTION

Botanically, coconut plant belongs to the *Arecaceae* family of palm trees, and has the scientific name: Cocos nucifera.

Coconut water, the clear liquid inside immature green coconuts, is highly valued due to its nutritional and therapeutic properties. It has been successfully used in several parts of the world for oral rehydration, treatment of childhood diarrhea, gastroenteritis and cholera. It is high in electrolyte content and has been reported as an isotonic beverage due to its balanced electrolytes like sodium and potassium that help restore losses of electrolytes through skin and urinary pathways. The constituents of coconut water are water 94%, sugars such as glucose, fructose and sucrose around 5%, proteins around 0.02% and lipids only about 0.01%. It is rich in minerals such as potassium, calcium, magnesium and manganese, and low in sodium.

II. COCONUT WATER: COMPOSITION

The coconut (Cocos nucifera Linn.) fruit, egg- shaped or elliptic, consists of a fibrous outer layer called coconut husk (mesocarp), which covers a hard layer called shell (endocarp). Inside the shell is a kernel (endosperm), which is considered the most important part of the fruit. It is the source of various coconut products such as copra, i.e. the dried meat of mature fruit with 5% water content, coconut oil, coconut milk, coconut water and coconut powder. The cavity within the

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kernel contains coconut water (Figure: 1). This part begins to form as a gel when the coconut is about 5 to 6 months old, becomes harder and whiter as coconut matures, and the inside is filled with coconut water. An immature coconut between 6 to 9 months contains about 750 mL of water that eventually becomes the flesh (FAO).

NUTRITIVE VALUE OF COCONUT WATER

Principle	Nutrient Value
Energy	19 Kcal
Carbohydrates	3.71 g
Protein	0.72 g
Total Fat	0.20 g
Cholesterol	0 mg
Dietary Fiber	1.1 g
Vitamins	
Floats	3 µg
Niacin	0.080 mg
Pantothenic acid	0.043 mg
Pyridoxine	0.032 mg
Riboflavin	0.057 mg
Thiamin	0.030 mg
Vitamin C	2.4 mg
Vitamin A	0 IU
Vitamin E	0 mg
Vitamin K	0 mcg
Electrolytes	
Sodium	105 mg
Potassium	250 mg
Minerals	
Calcium	24 mg
Copper	40 mcg
Iron	0.29 mg
Magnesium	25 mg
Manganese	0.142 mg
Zinc	0.10 mg
Phyto-nutrients	
Auxin (Gibberlin)	Present
Carotene,ß	0 µg
Cytokines	Present
Lutein-zeaxanthin	0 µg
Leucoanthocyanin	Present

III. BENEFITS OF COCONUT WATER

- ✓ Coconut water is a very refreshing drink to beat tropical summer thirst. Its liquid is packed with simple sugars, electrolytes, and minerals to replenish dehydration conditions inside the human body.
- ✓ Research studies suggest that cytokinins (e.g., kinetin and trans-zeatin) in coconut water found to have significant anti-ageing, anti-carcinogenic, and anti-thrombotic (anti-clot formation) effects.
- ✓ Coconut water has been generally offered to patients with diarrhea in many tropic regions to replace the fluid loss from the gastrointestinal tract and to reduce the need for hospitalisation. The osmolarity of tender coconut water is slightly greater than that of WHO recommended ORS (Oral Rehydration Therapy) solution. Presence of other biological constituents like amino acids, enzymes, minerals, and fatty acids may account for this higher osmolarity. Nonetheless, unlike WHO-ORS, its water is very low in sodium and chlorides, but rich in sugars and amino acids. This well-balanced fluid composition, along with much-needed calories, would be an ideal drink instead of any other kind of soft drink beverages available in the markets to correct dehydration conditions.
- ✓ Coconut water is composed of many naturally occurring bioactive enzymes such as *acid phosphatase, catalase, dehydrogenase, diastase, peroxidase, RNA-polymerases* etc. In effect, these enzymes help in the digestion and metabolism.
- ✓ Despite being very light in consistency, its water proportionately has better composition of minerals like calcium, iron, manganese, magnesium, and zinc than some of the fruit juices like oranges. (Compare the mineral composition of oranges).
- ✓ Its liquid is also a very good source of B-complex vitamins such as riboflavin, niacin, thiamin, pyridoxine, and folates. These vitamins are essential in the sense that the human body requires them from external sources to replenish.
- ✓ Coconut water carries a very good amount of electrolyte potassium. 100 ml of water has 250 mg of potassium and 105 mg of sodium. Together, these electrolytes help replenish electrolyte deficiency in the body due to diarrhea (loose stools).

Further, fresh coconut water has a small amount of vitamin-C (Ascorbic acid); It provides about 2.4 mg or 4% of RDA. Vitamin C is a water-soluble ant-oxidant.

IV. COCONUT WATER HAS FIVE ELECTROLYTES THAT THE BODY NEEDS

POTASSIUM : The most important positive ion (cation) inside your cells. Potassium regulates heart beat and muscle function

SODIUM: The most important positive ion in fluid outside your cells, and also the one most depleted with exercise, as you lose sodium through sweat and urine

MAGNESIUM: Important for maintaining the electrical potential of your cells, proper muscle function and preventing calcium overload

PHOSPHOROUS: Play important roles in bone health in transferring energy throughout your body, helping your muscles contract and regulating nerve function (partners with calcium)

CALCIUM: Important for bone health (partners with phosphorous)

Cytokinins are phytohormones or plant hormones. These hormones regulate the growth development and aging of a plant. Coconut water has been an important horticultural resource used in the propagation of several plants including orchids and traditional Chinese medicinal herbs. The cytokinins found in coconut water support cell division and promote rapid growth. Cytokinins have actually been found to exert an antiaging effect on human cells and tissues. When human cells are exposed to cytokinins aging slows down considerably. Cells treated with cytokinins don't undergo normal degenerative changes. Researchers have suggested that if you consume a diet rich in cytokinins, you may experience anti-aging effects and have less risk for degenerative and age-related diseases. Coconut water is the richest natural dietary source of cytokinins. Cytokinins have also been found to have anti- thrombolytic properties so may lower your risk for blood clots. But coconut's health benefits doesn't stop there. They have also been shown to have anti-cancer effects.

OBJECTIVE

- ✓ To know about the nutritive value and its effect on Dengue Patient.
- ✓ To intervene the coconut water to the Dengue Patient.

V. METHODS AND MATERIALS

Scientific methodology is necessary for a successful study as it directly indicates words the authenticity of the research and attempt has been made to provide the detail of techniques employed to attain this objective of a present investigation. Methodology includes techniques, devices and procedure applied for conducting the research, in this study, the respect concerning the research methodology have been categorized in the following.

VI. RESEARCH DESIGN

Simple random sampling was taken for sampling.

SELECTION OF AREA: Sahara Hospital, Lucknow, U.P.

SELECTION OF SAMPLE SIZE: Total 300 Dengue patient was selected for the study.

METHOD OF STUDY

A statistical figures in dispensable for scientific work in this study was primarily based on the biochemical data collection and well developed scheduled to make each interview as comprehensive as possible. The open ended questionnaire in which rigid ticking of respondent every opportunity to speak in a natural and uninhibited way.

ANALYSIS OF DATA

The data will be analysed using talk mark method the finding have been presented form of labels tabulation of data will be make comparison of each attribute in the different attributes study each group in the table express in term of frequency & percentage. The selected samples would be interviewed personally.

STATISTICAL ANALYSIS

N (%) = ----------×100

(%) = N = T.N. =

Total number of patient Percentage Number of frequency Total number of patients.

VII. RESULT AND DISCUSSION

The empirical result & discussion have been presented the purpose of convenience. The collected data were categorized, analyzed, tabulated & interpreted as per objective of the study.

Age (years)	Frequency (n=100)	Percentage (%)
1-14	75	25
15-29	95	31.6
30-59	90	30
60 above	40	13.3

Table 1: Distribution of patients on the basis of age groups

Table 1 shows that patients were belonging to different age groups 25% were 1 to 14 years, 31.6% were 15 to 29 years, 30% were 30 to 59 years and 13.3% were above the 60.

Gender	Frequency (n=100)	Percentage (%)
Children	65	21.6
Male	135	45
Female	100	33.3

Table 2: Distribution of patients on the basis of gender groups

Table 2 shows that the dengue patients were selected for the study in which 21.6% are children's, 45% were male and 33.3% were females.

Family Type	Yes	No
Joint	95	31.6
Nuclear	205	68.3

Table 3: Distribution of patients on the basis of family type

Table 3 shows that the dengue patient were 68.3% were belonging to nuclear family and 31.6% were belonging to joint family.

Fever	Frequency (n=100)	Percentage (%)
Yes	280	93.3
No	20	6.6

Table 4: Distribution of the patients on the basis of fever

Table 4 shows that 93.3% patients were suffering from fever during dengue and 6.6% patients had not fever.

Vomiting & Nausea	Frequency (n=100)	Percentage (%)
Yes	240	80
No	60	20

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Table 5: Distribution of the patients on the basis of vomiting and nausea

Table 5 shows that during dengue 80% patient were suffering from vomiting and nausea and 20% patients were not vomiting and nausea.

Electrolyte imbalance	Frequency (n=100)	Percentage (%)
Yes	300	100
No	00	00

Table 6: Distribution of patients on the basis of electrolytes imbalance

Table 6 shows that all the patients (100%) have electrolytes imbalance during dengue.

Intervene of coconut water	Frequency (n=100)	Percentage (%)
Yes	300	100
No	00	00

Table 7: Distribution of patients on the basis of intervene of coconut water

Table 7 shows that all the (100%) intervene the coconut water.

Electrolyte balance	Frequency (n=100)	Percentage (%)
Yes	280	80
No	20	20

Table 8: Distribution of patients on the basis of electrolytes balance after taking the coconut water

Table 8 shows that after taking the coconut water 80% patients have balanced electrolytes and 20% were not.

Increase appetite	Frequency (n=100)	Percentage (%)
Yes	244	81.3
No	56	18.6

Table 9: Distribution of patients on the basis of increased appetite after taking the coconut water

Table 9 shows that the patient (81.3) who were intervene with coconut water will be increase appetite and 18.6% patients were not increased their appetite after taking the coconut water.

VIII. CONCLUSION

A total no of 300 cases were confirmed to have dengue. A self prepared questionnaire and collected the biochemical parameter report before taking the coconut water and after taking the coconut water. Result shows that patients were belonging to different age groups and most of the patients were male than female and children. Mostly patients were belonging to nuclear family. During dengue patients were suffering from fever and nausea and vomiting. All the patients were intervene with coconut water and collected the report after taking the coconut water and it is find out that 80% patient have balanced electrolytes and 81.3% patients increased appetite after taking coconut. Coconut water have many nutrients and especially rich in potassium. So it analyzed those patients' electrolytes like sodium, potassium and chloride and other minerals and vitamins were maintained after taking the coconut water.

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