WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 7.523
Volume 6, Issue 5, 15-27. Review Article ISSN 2277–7105

ICSI OUTCOME AFTER USE OF DURIAN FOR INFERTILE MALE

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Article Received on
25 Feb. 2017,

Revised on 17 Mar. 2017,
Accepted on 05 April 2017

DOI: 10.20959/wjpr20175-8293

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ABSTRACT

Background: In vitro fertilization (IVF) cycle outcome correlates with the severity of seminal fluid analysis abnormalities as well as maternal age, number of follicles picked up and endometrial condition at time of embryo transfer. At our center male infertility comprise about 65% of total infertility cases which we saw during the last 3 years. **Objective**: To evaluate intracytoplasmic sperm injection (ICSI) outcome in term of fertilization and pregnancy rates with and without the use of durion sachets for the male of the infertile couples (including male with azoospermia). **Methods**: Prospective study was carried out during the period between November 2009 and November 2012, 302 couples were admitted for icsi cycle due to abnormal SFA and abnormal hormonal profile, 165 patients were treated by empirical treatment which consists of vitamin E, L-carnitine and Zinc, and those were compared with 110 patients who were further supplemented with Durion sachets. Patients with abnormal SFA were divided into three groups.

Group A: 27 patients who received no treatment.

Group B: 165 patients were received the empirical treatment.

(L-carnitine), vitamin E and Zinc.

Group C: 110 patients were received the empirical treatment and durion.

ICSI was performed in 302 consecutive IVF cycles on couples with a defined severe male infertility or with a proven failure of fertilization, neither male nor female partners were chosen from a waiting list or any other selective basis, including age, prior or anticipated

ovarian response, or oocyte number and quality, there were no age limit and cancellation rate was minimal about 10% of all cases underwent this study.

Introduction of durion in our center was started to be used in 2 groups

1st group patients' severe oligoasthenoteratospermia OAT

2nd group patients with mild to moderate abnormality in seminal analysis and have previous history of failed ivf cycle due to failed fertilization with an oocyte in Metaphase II stage.

KEYWORDS: Durion, ICSI, male factor infertility, ICSI outcome.

INTRODUCTION

Male infertility refers to a male's inability to cause pregnancy in a fertile female. In humans it accounts for 40-50% of infertility.[1,2,3]

Factors relating to male infertility include

Pre-testicular causes: refer to conditions that impede adequate support of the testes and include situations of poor hormonal support and poor general health including.

Hypogonadotropic hypogonadism due to various causes, obesity, ciliac disease, alcohol, Medications, including those that affect spermatogenesis such as chemotherapy, anabolic steroids, cimetidine, spironolactone; those that decrease FSH levels such as phenytoin; those that decrease sperm motility such as sulfasalazine and nitrofurantoin,Genetic abnormalities such as a Robertsonian translocation.[4,5,6,7,8]

Testicular factors

Testicular factors refer to conditions where the testes produce semen of low quantity and/or poor quality despite adequate hormonal support and include.

Age, y chm microdeletion, abnormal Karyotyping as klienfilter, neoplasm as seminoma, idiopathic failure, cryptorchidism Varicocele (14% in one study), trauma, hydrocele, mumps, malaria, testicular cancer, acrosomal defects affecting egg penetration, idiopathic oligospermia - unexplained sperm deficiencies account for 30% of male infertility.

Radiation therapy to a testis decreases its function, but infertility can efficiently be avoided by avoiding radiation to both testes.[9]

Post-testicular causes: decrease male fertility due to conditions that affect the male genital system after testicular sperm production and include defects of the genital tract as well as problems in ejaculation:

Vas deferens obstruction, lack of Vas deferens often related to genetic markers for Cystic Fibrosis, infection e.g. prostatitis, retrograde ejaculation, ejaculatory duct obstruction, hypospadias, impotence.

Previous studies revealed that a lack of nutritious foods and being overweight can lower the concentration of sperm and affect the ability of sperm to swim toward the egg.

The scientists also encourage male to consume *healthiest fruits* and grains to increase the chances of successful fertilization outside the womb. Recent findings in men and women who have fertility treatment, suggesting that the habit of drinking regularly and eat less nutritious foods that will lower the quality of their fertility.

Chairman of the researchers, Edson Borges of Fertility-Assisted Fertilization Center in Sao Paolo, said, the concentration of sperm is affected negatively by body weight index and alcohol consumption, and positively influenced by the consumption of cereals,fruits and nutritious meals every day. Research in Brazil involves 250 men and their partners who are doing fertility treatment called intracytoplasmic sperm injection (ICSI).

Each participant was asked to say how often they consumed a number of foods, including *fruits and vegetables*, nuts, grains, meat and fish. They also were asked how often drinking alcohol and smoking. Semen sample was then analyzed to determine their health and concentration of sperm in each pair were monitored during treatment. Better seminal parameters were noted.[10]

In our study we tried to study the effect of durian consumption on the male infertility in men undergo an icsi.

Durion which also called durian is regarded by many people in southeast Asia as the "king of fruits".[11], durian is the fruit of several tree species belonging to the genus *Duri*o.[12]

Durian is distinctive for its large size, strong odour, and formidable thorn-covered husk. The fruit can grow as large as 30 centimetres (12 in) long and 15 centimetres (6 in) in diameter,

and it typically weighs one to three kilograms (2 to 7 lb). Its shape ranges from oblong to round, the colour of its husk green to brown, and its flesh pale yellow to red, depending on the species

Figure 1: Durian fruit.

Durian flowers are large and feathery with copious nectar, and give off a heavy, sour, and buttery odour. These features are typical of flowers pollinated by certain species of bats that eat nectar and pollen.[13]

According to research conducted in Malaysia in the 1970s, durians were pollinated almost exclusively by cave fruit bats (*Eonycteris spelaea*);[14] however, a 1996 study indicated two species, *D. grandiflorus* and *D. oblongus*, were pollinated by spiderhunters (Nectariniidae) and another species, *D. kutejensis*, was pollinated by giant honey bees and birds as well as bats.[15]

The durian is native to Brunei, Indonesia and Malaysia.[16] Malaysia and Indonesia follow, both producing about 265,000 tonnes each. Of this, Malaysia exported 35,000 tonnes in 1999. Durian fruit is used to flavour a wide variety of sweets 52) red durian is fried with onions and chilli and served as a side dish.[17]

Durian fruit contains a high amount of sugar.[18] vitamin C, potassium, and the serotonergic amino acid tryptophan.[19], and is a good source of carbohydrates, proteins, and fats.[20] It is recommended as a good source of raw fats by several raw food advocates,[13,21] while others classify it as a high-glycemic food, recommending to minimise its consumption.[22,23]

In Malaysia, a decoction of the leaves and roots used to be prescribed as an antipyretic. The leaf juice is applied on the head of a fever patient.[24] The most complete description of the medicinal use of the durian as remedies for fevers is a Malay prescription, collected by

Burkill and Haniff in 1930. It instructs the reader to boil the roots of *Hibiscus rosa-sinensis* with the roots of *Durio zibethinus*, *Nephelium longan*, *Nephelium mutabile* and *Artocarpus integrifolia*, and drink the decoction or use it as a poultice.[25]

In the 1920s, Durian Fruit Products, Inc., of New York City launched a product called "Dur-India" as a health food supplement, selling at US$9 for a dozen bottles, each containing 63 tablets. The tablets allegedly contained durian and a species of the genus *Allium* from India and vitamin E. The company promoted the supplement saying that it provides "more concentrated healthful energy in food form than any other product the world affords".[26]

Nutritional Facts of Durian Fruit content. But that should not deter you from consuming it as there is an entire nutrition profile that boasts of healthy character of this fruit. The following chart serves up the nutrient content for every 100 grams of Durian.

Energy	147 Kcal
Carbohydrates	27.09 gms
Dietary Fibre	3.8 gms
Fats	5.33 gms
Protein	1.47 gms
Vitamin A	44 iu
Vitamin B1	0.374 mg
Vitamin B2	0.2 mg
Vitamin B3	1.074 mg
Folate	36 ug
Vitamin B5	0.23 mg
Vitamin B6	0.316 mg
Vitamin C	19.7 mg
Calcium	6 mg
Magnesium	30 mg
Iron	0.43 mg
Phosphorus	39 mg
Potassium	436 mg
Sodium	2 mg
Manganese	0.325 mg
Zinc	0.28 mg

Figure 2: Nutritional facts of Durian.

The Water content of Durian is a reasonable and healthy 65% and cholesterol is zero even though it has considerable amount of fats. Apart from dietary fiber, Durian is a rich source of Vitamin B1 and fulfills about 33% of our daily requirement. It also makes up 24% of our daily need of Vitamin B6 and Vitamin C. Trace metals like manganese, Potassium and magnesium are also profusely abundant ranging between 8% to 15% of our requirement. This high nutrition density translates into important health benefits.[27]

Health Benefits of Durian

1. Increases Immunity. Immune system is basically a biological structure and processes that protect the body from infections and diseases.
2. Durian fruits contain high amount of folate or folic acid. Folate is required for the production of hemoglobin. It stimulates production of blood that improves the functionality of the body and effective oxygen distribution Alleviates Anemia
3. Bone Health. Durian contains a number of trace metals including Potassium and calcium
4. Improves Sleep & allays Depression. Durian fruit contains amino acids known as Tryptophan– a natural sleep inducing compound. Tryptophan is required to metabolize serotonin and melatonin. Both of these neuro-chemicals are beneficial in improving mood.
5. Maintains Blood Pressure. Durian fruit contains high amounts of potassium and moderate quantity of Sodium. Both of these factors make Durian a blood pressure optimizing fruit
6. Fights Cancer. Durian fruit contains good amount of antioxidants in form of Vitamin B-complex, C and E.
7. Improves Digestion. Durian fruit contains fiber which provides roughage which is critical in absorbing fats and making your stools easy to pass the high amount of Vitamin B1 and Vitamin B3 improves appetite and regulates healthy digestion
8. Weight loss. High amount of fiber, Nil cholesterol, complete composition of minerals and heavy water content makes Durian a snack for weight loss
9. Ageing of the Skin. Antioxidant purify and clean your body's system by throwing out free radicals and other harmful agents from the body. The high water content of Durian is an added advantage along with its antioxidant content. Water keeps the skin hydrated, reduces dryness and alleviates the appearance of fine lines. It also nourishes skin for clear and smooth skin.
10. Increases and encourages fertility as can act as a herbal medicine. Eating durian in controlled and recommended quantity in case of infertility.

Apart from this important property, Durian has no cholesterol and can be very effective in weight loss programs. Unhealthy weight and obesity increase the risk of miscarriage during pregnancy.

Sexual function

A number of studies have recently been conducted to evaluate the potential of durian meat to act as an aphrodisiac. The results are in, and it can produce intensified sexual libido and stamina, and also reduce the chances of infertility in men and women, and increase sperm motility. All in all, it is an aphrodisiac in every sense of the word.

As we said male infertility is one of the most frustrating infertility problems may be caused by low sperm count. And around half of the infertility problems encountered by couples are caused by male infertility.

"Normal" sperm count, as defined by the World Health Organization, is characterized by:

1. The concentration of spermatozoa should be at least 20 million per ml.
2. The total volume of semen should be at least 2ml.
3. The total number of spermatozoa in the ejaculate should be at least 40 million.
4. At least 75 per cent of the spermatozoa should be alive (it is normal for up to 25 per cent to be dead).
5. At least 30 per cent of the spermatozoa should be of normal shape and form.
6. At least 25 per cent of the spermatozoa should be swimming with rapid forward movement.
7. At least 50 per cent of the spermatozoa should be swimming forward, even if only sluggishly.

These numbers amount to averages; Having a sperm count below these numbers does not guarantee that a man will be unable to father a child; likewise, having a sperm count higher than these numbers does not guarantee that a man will be able to father a child.

There are a variety of factors that can cause low sperm count, including stress, genetic causes, nutritional deficiencies, the use of prescription or illicit drugs, obesity, varicoceles, infections, and smoking.

There are several things that may help increase sperm count, including

1. Exercise. Regular exercise will help reduce stress, but be careful. Excessive exercise can cause harm, as can certain exercises that may negatively impact the testicles, such as bicycling.
2. Ejaculating less often. The more often a man ejaculates, the less dense the semen will be. Maintain a gap of three days between ejaculations.
3. Refrain from smoking and drinking alcohol.
4. Massage body with herbal oil, which may improve blood circulation.
5. Have sex in the early morning or afternoon. It is believed that sperm levels are often highest in the morning.
6. Avoid tight underwear, saunas, and whirlpools, all of which may increase the temperature of the testicles.
7. Use natural supplements and vitamins that may assist with sperm count.
8. Maintain a high protein, low fat diet, rich in vegetables and whole grains. Avoid bitter and spicy foods.

There are also a variety of vitamin supplements that may assist with low sperm count. They include.

- Vitamin C
- Vitamin E
- Vitamin B12 Selenium
- Zinc Arginine
- Carnitine

There are several dietary measures that a man who has a low sperm count can take to attempt to increase his sperm count, including.

- Eat a diet that includes whole, unprocessed foods. The best foods for health in general, and also for sperm count problems, are whole grains, legumes, vegetables, fruits, nuts, and seeds.
- Eliminate alcohol intake. In addition to the general nutritional benefits of avoiding alcohol, avoiding alcohol may also assist with sexual performance issues.
- Identify and avoid food allergies.

- Raw sunflower seeds and pumpkin seeds have been shown to help with male fertility. It is recommended that a man with a low sperm count eat 1/4 cup of raw sunflower or pumpkin seeds each day.
- Drink at least 48 ounces of water every day.
- When possible, try to eat organic foods. Some studies suggest a connection between chemical fertilizers and pesticides with both male and female infertility.

  As you can see, many of these dietary changes are not only useful in increasing sperm count, many of them just make nutritional sense as well!.[26]

METHODOLOGY

A prospective study was carried out at Baghdad specialized fertility center during the period between November 2009 and November 2012, 302 couples were admitted for icsi cycle due to abnormal SFA and abnormal male hormonal profile, 165 patients were treated by empirical treatment which consists of vitamin E, L-carnitine and Zinc, and those were compared with 110 patients who were further supplemented with Durian sachets in addition to the empirical treatment mentioned above.

Patients with abnormal SFA or abnormal hormonal profile were divided into three groups.

Group A:27 patients who received no treatment

Group B: 165 patients were received the empirical treatment

(L-carnitine), vitamin E and Zinc.

Group C: 110 patients were received the empirical treatment and durian.

Figure 3: Durian Mix used for infertile males in a dose of one sachet per day for 2 months.

Introduction of durian in our center was started to be used in 2 groups

1st group patients' severe oligoasthenoteratospermia OAT

2nd group patients with mild to moderate abnormality in seminal analysis and have previous history of failed IVF cycle due to failed fertilization with an oocyte in Metaphase II stage.

ICSI was performed in 302 consecutive IVF cycles.

Regarding the difference in the SFA parameters before and after using durian, these are shown by table 1 where we can see a significant improvement in all semen parameters after durian prescription.

Table 1 -SFA results for group c before and after durian use.

SFA parameters	Before durian	After durian
Mean of motility %	Active 0-10 Moderate 25-30 Sluggish 25-60 Immotile 40-100	Active 0-28 Moderate 26-50 Sluggish 33-58 Immotile 50-90
Sperm count Million per ml	0-4 million	Few sperms-9
Normal Morphology %	0-4	1-8

Regarding the outcome of icsi cycles in form of fertilization and pregnancy rates for the 3 groups ,the results were as follows in table2.

Table 2 –icsi outcome.

Icsi outcome	Group A n =27	Group B n=165	Group C n=110
Fertilization rate %	4 (14.8)	30 (18.1)	26 (23.6)
Pregnancy rate %	3 (11.1)	21 (12.7)	21 (19)

DISCUSSION

Durian is fruit available through all seasons. southeast asian traditional beliefs, as well as traditional chinese medicine, consider the durian fruit to have warming properties helping fight the inability to concieve. Several medical investigations on the validity of this belief have been conducted with varying conclusions, though a study by the university of tsukuba finds the fruit's high ability to fight infertility in the cases of both male and female quite possible.[27]

The research took place in India, which is apparently suffering from an infertility epidemic. According to the All India Institute of Medical Sciences (AIIMS) the sperm count of a normal Indian adult male has plummeted from an estimated 60 million squirmers per ml three decades ago to only 20 million, probably due to the scary sounding "xenobiotics emanating from chemical industries."

Although some people (like me) might argue that a decrease in India's reproduction rate might actually be beneficial to the overcrowded country and the already overpopulated world, it's devastating to all those couples trying and failing to start a family. In southern India, those who have heard about durian's naughty reputation are paying out big bucks for an exotically smelly homeopathic remedy. The researchers suggest that the source of the durian's kingship is its sterol content, which "increase the steroidogenesis and elevate androgen levels which results in the observed effect." In more interesting words, all you male durian freaks are doping.[28]

These results agree with ours but our study is the first study that evaluate Durian effects on icsi outcome which revealed that most of seminal fluid parameters can be improved by the addition of Durian to male supplementary treatment (table -1) and also better fertilization and pregnancy rate can be achieved in those group (Table 2).

CONCLUSION

Icsi outcome can be better in term of fertilization and pregnancy rates when infertile males were supplemented with Durian sachets before undergoing icsi cycle.

REFERENCES

1. "Men's Health - Male Factor Infertility". University of Utah Health Sciences Center. 2003-04-01. Archived from the original on 2007-07-04. Retrieved 2007-11-21.
2. Brugh VM, Lipshultz LI (2004). "Male factor infertility". Medical Clinics of North America, 88(2): 367–85. doi:10.1016/S0025-7125(03)00150-0. PMID 15049583.
3. Hirsh A (2003). "Male subfertility". BMJ, 327(7416): 669–72. doi:10.1136/bmj.327.7416.669. PMC 196399. PMID 14500443
4. Teerds KJ, de Rooij DG, Keijer J (2011). "Functional relationship between obesity and male reproduction: from humans to animal models". Hum. Reprod. Update, 17(5): 667–83. doi:10.1093/humupd/dmr017. PMID 21546379.

5. Hozyasz, K (Mar 2001). "Coeliac disease and problems associated with reproduction". aaGinekol Pol, 72(3): 173–9. PMID 11398587.
6. Sher, KS; Jayanthi, V; Probert, CS; Stewart, CR; Mayberry, JF (1994). "Infertility, obstetric and gynaecological problems in coeliac sprue". Dig Dis, 12(3): 186–90. PMID 7988065.
7. Freeman, HJ (Dec 2010). "Reproductive changes associated with celiac disease". World J Gastroenterol, 16(46): 5810–4. doi:10.3748/wjg.v16.i46.5810. PMC 3001971. PMID 21155001
8. Leibovitch I, Mor Y (2005). "The Vicious Cycling: Bicycling Related Urogenital Disorders". European Urology, 47(3): 277–86; discussion 286–7. doi:10.1016/j.eururo.2004.10.024. PMID 15716187
9. "Infertility in men" Retrieved 2007-11-21.
10. Thursday, November 24, 2011 Eating fruit good for male fertility. http://fruit only.blogspot.com/2011/11/eating-fruit-good-for-male-fertility.html
11. Heaton, Donald D. (2006). A Consumers Guide on World Fruit. BookSurge Publishing, 54–56. ISBN 1-4196-3955-2.
12. Pronunciation common to Oxford English Dictionary (2 ed.). Oxford University Press. and "Random House Dictionary". dictionary.com, 2008-10-09.
13. Whitten, Tony (2001). The Ecology of Sumatra. Periplus. p. 329. ISBN 962-593-074-4
14. Brown, Michael J. (1997). Durio – A Bibliographic Review. International Plant Genetic Resources Institute (IPGRI). ISBN 92-9043-318-3. Retrieved 2008-11-20.
15. Yumoto, Takakazu (2000). "Bird-pollination of Three Durio Species (Bombacaceae) in a Tropical Rainforest in Sarawak, Malaysia". American Journal of Botany (American Journal of Botany, 7(8), 87(8): 1181–1188. doi:10.2307/2656655. JSTOR 2656655. PMID 10948003
16. "Committee on Commodity Problems – VI. Overview of Minor Tropical Fruits". FAO. December 2001. Retrieved 2008-11-20.
17. "Traditional Cuisine". Sabah Tourism Promotion Corporation. Retrieved 2008-11-20.
18. McGee, Harold (2004). On Food and Cooking (Revised Edition). Scribner. p. 379. ISBN 0-684-80001-2
19. Wolfe, David (2002). Eating For Beauty. Maul Brothers Publishing. ISBN 0-9653533-7-0.
20. "Agroforestry Tree Database – Durio zibethinus". International Center for Research in Agroforestry. Retrieved, 2008-11-20.

21. Boutenko, Victoria (2001). 12 Steps to Raw Foods: How to End Your Addiction to Cooked Food. Raw Family, p. 6. ISBN 0-9704819-3-4.
22. Cousens, Gabriel (2003). Rainbow Green Live-Food Cuisine. North Atlantic Books. p. 34. ISBN 1-55643-465-0
23. Klein, David (2005). "Vegan Healing Diet Guidelines". Self Healing Colitis & Crohn's. Living Nutrition Publications. ISBN 0-9717526-1-3.
24. Morton, J. F. (1987). Fruits of Warm Climates. Florida Flair Books. ISBN 0-9610184-1-0
25. Tips on Improving Sperm Counthttp://www.babyhopes.com/articles/ways-to-increase-sperm-count.html
26. http://www.indiamart.com/bangalore-med/other-products.htm. Infertility Treatment Fruit Durian.
27. http://wiki-fitness.com/ http://wiki-fitness.com/air-cleaning-house-plant-better-health/ 25 November, 2015 By Deepak Kevat
28. Durian As Aphrodisiac: What The Research Says,year of the dorion.