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Estimate the level of testosterone hormone using I-chroma technique in males treated with Royal jelly and honeybee

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Abstract The experiment based on 10 matured men samples collected randomly from Baghdad Providence. The 10 samples divided into two groups, serum testosterone level of all 10 patient had been done using Ichroma technique. the treated group administered 2.5ml of honeybee with 350mg of royal jelly daily for (15day) while the second group stay as control group. After 15 days blood samples had been collected and serum separated to made another testosterone test for both groups using same i-chroma technique. The main Aim of this study is estimating the effect of royal jelly and honeybee as food on the testosterone hormone level in men. The result show that there was significant increase in the testosterone levels in treated group in comparison with control group, after experiment the result show significant increase in testosterone levels (in samples number 1,2,3,4 and 5) as the following (23.2 n.mo/L, 16.6 n.mo/L, 17.7 n.mo/L, 10.1 n.mo/L and 29.7 n.mo /L respectively. The study concluded that, short term treatment of royal jelly in combined with honey bee increasing the level of blood testosterone hormone in men in different ages significantly. The study either concluded that we can used honeybee and royal jelly as natural treatment of low testosterone level in men.

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Keywords: *I-chroma , testosterone , Royal jelly*.

1. INTRODUCTION

Testosterone: an anabolic steroid that is considered the leading sex hormone in men [1] it is a pleiotropic hormone that plays various roles in the growth of the penis in different roles and during puberty. Generally, testosterone is a hormone associated with manhood, it is used as a treatment for men with late hypogonadism, a condition in men who experience symptoms caused by a decrease in serum testosterone [2].

Symptoms associated with low testosterone can include decreased libido, muscle loss, depression and / or erectile dysfunction [3]. In some cases low serum testosterone levels have been found to be associated with a wide range of diseases / aging diseases such as Alzheimer's atherosclerosis cancer osteoporosis and infertility Other disorders of low testosterone levels include depression [4]. The use of testosterone replacement therapy (TRT) among men over the age of 40 has more than tripled over the past decade [5]. The main Aim of this study is estimate the effect of royal jelly and honeybee as food on the testosterone hormone level in men.

Therapeutical uses of Honeybee: Honey is a natural product that has been valued in traditional medicine for centuries, it suggests that honey can produce many health benefits including antioxidant, anti-inflammatory [6] reported that the honeybee represent as antibacterial while [7] reported that it may play role of anti-diabetic agent as well as it have protective effects [8].

For a long time, it has been shown that honey can be used to overcome liver, cardiovascular and vascular problems [9]. reported that improving testosterone production , eating honey on an empty stomach helps in the process of improving testosterone production due to the availability of vitamin B . Honey also contains boron, which stimulates testosterone production in the treatment of common colds and coughs [10].

and is used in modern medicine to treat wounds among other uses. Propolis offers many beneficial effects on human health, citing for example antifungal, antibacterial and anti-inflammatory [11].

Bee venom has also been used in traditional medicine to treat diseases, such as arthritis, pain, tissue and skin diseases with its anti-inflammatory, antinociceptive and anticancer activities [12]. Previous studies have shown that the addition of bees improves the activity of the enzyme marker enzyme spermatogenesis in mice [13]. In Greece and Rome, fame was used as a medicine and energy [14] Therefore, honey has played a significant role in human diet from the beginning of

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human history to the present day. Currently, honey is widely used in nutrition, making it a nutritious supplement with known medicinal properties worldwide.

Therapeutical uses of Royal jelly: Royal jelly (RJ) is a white, creamy yellow liquid secreted by the mandibular and hypopha- ryngeal glands of nursing bees to feed young caterpillars in the colony and the queen bee [15]. RJ is composed mainly of essential chemicals that have active functions that promote health as well as proteins, lipids, sugars, vitamins, minerals and free amino acids [16].

RJ is effective in reducing and regulating triglycerides and cholesterol in humans. RJ has been found to protect DNA from oxidative damage. It is reported that RJ inhibits the adverse effects of exogenous estrogen the male reproductive system [17]. However, other studies have shown that RJ can promote oxidative stress, male infertility and may inhibit cell proliferation by violating signaling . potential applications for cancer treatment [18], and aging health and longevity . Royal Jelly is a hormone-boosting stimulant that maintains organized and normal activity hormones and is an annual stimulant and makes it essential in the treatment of chronic fatigue syndrome regulates blood pressure [19].

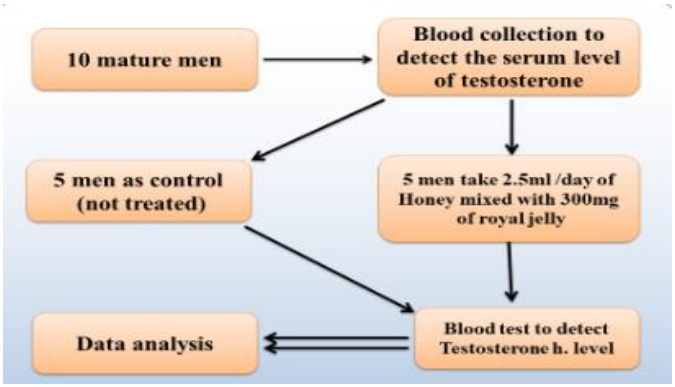
RJ has many therapeutic activities such as anti-inflammatory antioxidantanti-bacterial, anti- tumor and immune modification function [20,21]. had found that testosterone levels increased in the royal jelly-treated group compared with the groups treated with cisplatin and royal jelly cisplatin. RJ is consumed worldwide on a nutritious, protective diet [22].

2. Materials and Methods.

Experimental Design: The experiment based on 10 matured men samples collected randomly from Baghdad Providence .The 10 samples divided into two groups (each group contain 5 patient) .

At the beginning we collect blood samples from all 10 patient and serum testosterone level had been done using Ichroma technique then the second group treated with 2.5ml of honeybee with 350mg of royal jelly daily at morning for (15day) (the honey and royal gel were Iraqi brand Manahil Kanz Altabiea) while the second group (B) stay as control group (not treated) .

After 15 days blood samples had been collected and serum separated to made another testosterone test for both groups (treated and control group) using same ichroma technique to compare the data of result before and after treatment. This work was performed at Uruk University, Faculty of Health and Medical Technolog-ies, Baghdad, Iraq.



2. Samples: samples of study as we said collected randomly from Baghdad city , it represent (10 sexually matured healthy men) there aged ranged from (23-37 years old). The study Started in 1/3/2021 and lasted for 3 months. the first test of testosterone done in 2/3/2021 while the second test end at the date 17/3/2021. Name of samples and information of semen test listed in the table below (table:1)

Table (1): *Information of samples and date of serum testosterone tests*

No	Name	age	Marital state	date of 1st test	date of 2ed test	Notes
1	M. S.	37	Married	2/3/2021	17/3/2021	Treated
2	M. A.	28	Single	2/3/2021	17/3/2021	Treated
3	A. M.	25	Single	2/3/2021	17/3/2021	Treated
4	D. A.	31	Single	2/3/2021	17/3/2021	Treated
5	AD. H.	28	Single	2/3/2021	17/3/2021	Treated
6	T. H.	23	Single	2/3/2021	17/3/2021	Not treated
7	B. J.	37	Married	2/3/2021	17/3/2021	Not treated
8	A. H.	29	Single	2/3/2021	17/3/2021	Not treated
9	H. A.	25	Married	2/3/2021	17/3/2021	Not treated
10	Ad. R.	25	Single	2/3/2021	17/3/2021	Not treated

Semen test procedure: we used the i-chroma device to detect T. hormone levels in blood samples as the following :

1) Transfer 30 µl of the Displacement Reagent to a sample mixing tube.
2) Transfer 75 µl of sample (serum) using Transfer pipette to a sample containing mixing tube Detector offset.
3) Close the cap of the sample mixing tube and mix the sample Completely by shaking it about 10 times.
4) Incubate the tube at room temperature for 3 minutes.
5) Take out 75 µl of the sample mixture and load it in Detection of the buffer tube.
6) Close the cap of the insulating tube for detection and mixing of the sample Completely by shaking it about 10 times.
7) Take out 75 µl of the sample mixture and load it in A good sample is on the cartridge.
8) Insert the sample cartridge into the opening of the i-chamber or incubator (25 ° C).
9) Leave the cartridge loaded with samples in the i-Chamber or in the Incubator for 12 minutes. Scan

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the sample cartridge immediately when a file appears Incubation time is over.

10) Scan the sample cartridge by inserting it in The Ichroma ™ tests cartridge holder.
11) Press the "Select" button on the device to perform the Ichroma ™ tests The scanning process began.
12) The ichroma ™ tests tool starts scanning the loaded sample cartridge immediately . Read the test result on the display screen of the device Ichroma ™test.

3. RESULTS

According to the table (2) that demonstrated the main effect of honeybee and royal jelly of serum testosterone level after 15 days of experiment, the result show that there were significant increase in the testosterone levels in treated group in comparison with control group at (P≤0.05) . The levels of testosterone hormone in treated group (in samples number 1,2,3,4 and 5) before experiment were (17.8 n.mo/L, 12.4 n.mo/L, 14.2 n.mo/L, 7.4 n.mo/L and 23.5 n.mo/L respectively) , after experiment the result show significant increase in testosterone levels (in samples number 1,2,3,4 and 5) as the following (23.2 n.mo/L, 16.6 n.mo/L, 17.7 n.mo/L, 10.1 n.mo/L and 29.7 n.mo/L respectively) , while in control group there are only one sample (number 6) has significant abnormal increase in the in testosterone hormone after 15 day reaching about (35.1 n.mo/L) in comparison with the result before experiment (15.5 n.mo/L) , the other 4 samples of control group (samples number 7,8,9and 10) had no significant decrease in the level of testosterone hormone before experiment which were (13.8 n.mo/L, 15.5 n.mo/L, 18.4 n.mo/L, and 17.7 n.mo/L, respectively) in comparison with the result after experiment which were (11.9 n.mo/L, 14.1 n.mo/L, 17.7 n.mo/L, and 12.3 n.mo/L, respectively) in samples number (7,8,9 and 10).

Table (2): *information of samples and data of serum testosterone tests.*

Samples No	Type	Testosterone level before experiment n.mo/L	Testosterone level after experiment n.mo/L	Effect of T. level before and after experiment n.mo/L
1	Treated	17.8	23.2*	▲ 5.4
2	Treated	12.4	16.6*	▲ 4.2
3	Treated	14.2	17.7*	▲ 3.5
4	Treated	7.4	10.1*	▲ 2.7
5	Treated	23.5	29.7*	▲ 6.2
6	Control	15.5	35.1**	▲ 19.6
7	Control	13.8	11.9	▼ -1.9
8	Control	15.5	14.1	▼ -1.4
9	Control	18.4	17.7	▼ -0.7
10	Control	13.7	12.3	▼ -1.4
P≤0.05				

Discussion : According to the result of table (2) the high increase in the level of testosterone hormone done because the direct positive effect of royal jelly and honeybee on the endocrine system of the body which result from the nature stimulating effect of royal jelly and honeybee on testes to increase the output of testosterone hormone in blood , the result was agreed with (Harrod,2016) (Taşdoğan ***et al.,***2019) when they reported that intake of short-term royal jelly were effective in increasing testosterone levels in sedentary healthy men. In other hand the result show significant increase in testosterone level in sample number (6) which didn't take royal jelly and honeybee, we suspect that men undergo abnormal defect in the adrenal gland which cause release abnormal bursts of hormone because of direct effect on the pituitary gland or he may had prostate tumor, the result was agreed with (Pizzorno ***et al.,*** 2007) they reported that honeybee have regularly effect on endocrine system.

4. CONCLUSIONS

The study concluded that , short term treatment of royal jelly in combined with honey bee lead to increase the level of blood testosterone hormone within normal range in men in different ages significantly. The study either concluded that we can used honeybee and royal jelly as natural treatment of low testosterone level in men.

in comparison with control group at (P≤0.05) . The levels of testosterone hormone in treated group (in samples number 1,2,3,4 and 5) before experiment were (17.8 n.mo/L, 12.4 n.mo/L, 14.2 n.mo/L, 7.4 n.mo/L and 23.5 n.mo/L respectively) , after experiment the result show significant increase in testosterone levels (in samples number 1,2,3,4 and 5) as the following (23.2 n.mo/L, 16.6 n.mo/L, 17.7 n.mo/L, 10.1 n.mo/L and 29.7 n.mo/L respectively) , while in control group there are only one sample (number 6) has significant abnormal increase in the in testosterone hormone after 15 day reaching about (35.1 n.mo/L) in comparison with the result before experiment (15.5 n.mo/L) , the other 4 samples of control group (samples number 7,8,9and 10) had no significant decrease in the level of testosterone hormone before experiment which were (13.8 n.mo/L, 15.5 n.mo/L, 18.4 n.mo/L, and 17.7 n.mo/L, respectively) in comparison with the result after experiment which were (11.9 n.mo/L, 14.1 n.mo/L, 17.7 n.mo/L, and 12.3 n.mo/L, respectively) in samples number (7,8,9 and 10).

5. DISCUSSION

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REFERENCES

[1] Banihani, S. A. (2019, July 1). Mechanisms of honey on testosterone levels. *Heliyon*. Elsevier Ltd. https://doi.org/10.1016/j.heliyon.2019.e02029

[2] Buhner, S. (2016). *Natural Remedies for Low Testosterone: How to Enhance Male Sexual Health and Energy* (pp. 37-45). Healing Arts; 2nd edition (22 January 2016).

[3] Brock, G., Heiselman, D., Knorr, J., Ni, X., & Kinchen, K. (2016). 9-Month Efficacy and Safety Study of Testosterone Solution 2% for Sex Drive and Energy in Hypogonadal Men. *Journal of Urology*, *196*(5), 1509–1515. https://doi.org/10.1016/j.juro.2016.04.065

[4] Omar, H. A., & Tolba, M. F. (2018). Caffeic acid phenethyl ester guards against benign prostate hypertrophy in rats: Role of IGF-1R/protein kinase-B (Akt)/β-catenin signaling. *IUBMB Life*, *70*(6), 519–528. https://doi.org/10.1002/iub.1743

[5] Hackett, G. I. (2016, February 1). Testosterone Replacement Therapy and Mortality in Older Men. *Drug Safety*. Springer International Publishing. https://doi.org/10.1007/s40264-015-0348-y

[6] Ahmed, S., & Othman, N. H. (2013). Honey as a potential natural anticancer agent: A review of its mechanisms. *Evidence-Based Complementary and Alternative Medicine*. https://doi.org/10.1155/2013/829070

[7] Attia, W. Y., Gabry, M. S., El-Shaikh, K. A., & Othman, G. A. (2008). The anti-tumor effect of bee honey in Ehrlich ascite tumor model of mice is coincided with stimulation of the immune cells. *The Egyptian Journal of Immunology / Egyptian Association of Immunologists*, *15*(2), 169–183.

[8] hen, Q., Cao, T., Li, N. N., Zeng, C., Zhang, S., Wu, X., … Cai, H. (2021, May 24). Repurposing of Anti-Diabetic Agents as a New Opportunity to Alleviate Cognitive Impairment in Neurodegenerative and Neuropsychiatric Disorders. *Frontiers in Pharmacology*. Frontiers Media S.A. https://doi.org/10.3389/fphar.2021.667874

[9] El-Arab, A. M. E., Girgis, S. M., Hegazy, E. M., & El-Khalek, A. B. A. (2006). Effect of dietary honey on intestinal microflora and toxicity of mycotoxins in mice. *BMC Complementary and Alternative Medicine*, *6*. https://doi.org/10.1186/1472-6882-6-6

[10] Cook, N. L., & Romashkan, S. (2011, January). Why do we need a trial on the effects of testosterone therapy in older men? *Clinical Pharmacology and Therapeutics*. https://doi.org/10.1038/clpt.2010.217

[11] Wagh, V. D. (2013). Propolis: A wonder bees product and its pharmacological potentials. *Advances in Pharmacological Sciences*. https://doi.org/10.1155/2013/308249

[12] Tasdogan, A. M., Pancar, Z., Özdal, M., Vural, M., Pancar, S., & Birinci, Y. Z. (2020). The effect of short-term royal jelly supplement on testosterone levels in sedentary and healthy individuals. *Progress in Nutrition*, *22*(1), 275–280. https://doi.org/10.23751/pn.v22i1.8746

[13] Silici, S., Ekmekcioglu, O., Eraslan, G., & Demirtas, A. (2009). Antioxidative Effect of Royal Jelly in Cisplatin-induced Testes Damage. *Urology*, *74*(3), 545–551. https://doi.org/10.1016/j.urology.2009.05.024

[14] Jones, W. H. S. (1957). Ancient roman folk medicine. *Journal of the History of Medicine and Allied Sciences*, *12*(10), 459–472. https://doi.org/10.1093/jhmas/XII.10.459

[15] Viuda-Martos, M., Ruiz-Navajas, Y., Fernández-López, J., & Pérez-Álvarez, J. A. (2008, November). Functional properties of honey, propolis, and royal jelly. *Journal of Food Science*. https://doi.org/10.1111/j.1750-3841.2008.00966.x

[16] Nakajima, Y., Tsuruma, K., Shimazawa, M., Mishima, S., & Hara, H. (2009). Comparison of bee products based on assays of antioxidant capacities. *BMC Complementary and Alternative Medicine*, *9*. https://doi.org/10.1186/1472-6882-9-4

[17] Ahmad, S., Campos, M. G., Fratini, F., Altaye, S. Z., & Li, J. (2020, January 2). New insights into the biological and pharmaceutical properties of royal jelly. *International Journal of Molecular Sciences*. MDPI AG. https://doi.org/10.3390/ijms21020382

[18] De Felice, F., Marchetti, C., Marampon, F., Cascialli, G., Muzii, L., & Tombolini, V. (2019, January 1). Radiation effects on male fertility. *Andrology*. Blackwell Publishing Ltd. https://doi.org/10.1111/andr.12562

[19] Lunenfeld, B. (2006). Men's health and aging: The 5th world congress on the aging male. *Aging Male*, *9*(1), 1–70. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=19495567&site=ehost-live&scope=site

[20] Kimura, Y. (2008). Antitumor and antimetastatic actions of various natural products. *Studies in Natural Products Chemistry*, *34*(C), 35–76. https://doi.org/10.1016/S1572-5995(08)80024-5

[21] Ullah, A., Munir, S., Badshah, S. L., Khan, N., Ghani, L., Poulson, B. G., … Jaremko, M. (2020, November 1). Important flavonoids and their role as a therapeutic agent. *Molecules*. MDPI AG. https://doi.org/10.3390/molecules25225243

[22] Vucevic, D., Melliou, E., Vasilijic, S., Gasic, S., Ivanovski, P., Chinou, I., & Colic, M. (2007). Fatty acids isolated from royal jelly modulate dendritic cell-mediated immune response in vitro. *International Immunopharmacology*, *7*(9), 1211–1220. https://doi.org/10.1016/j.intimp.2007.05.005