A GUIDE TO REGULATING HORMONE FUNCTION UTILIZING TRADITIONAL CHINESE MEDICINE: A COMPREHENSIVE LITERATURE REVIEW

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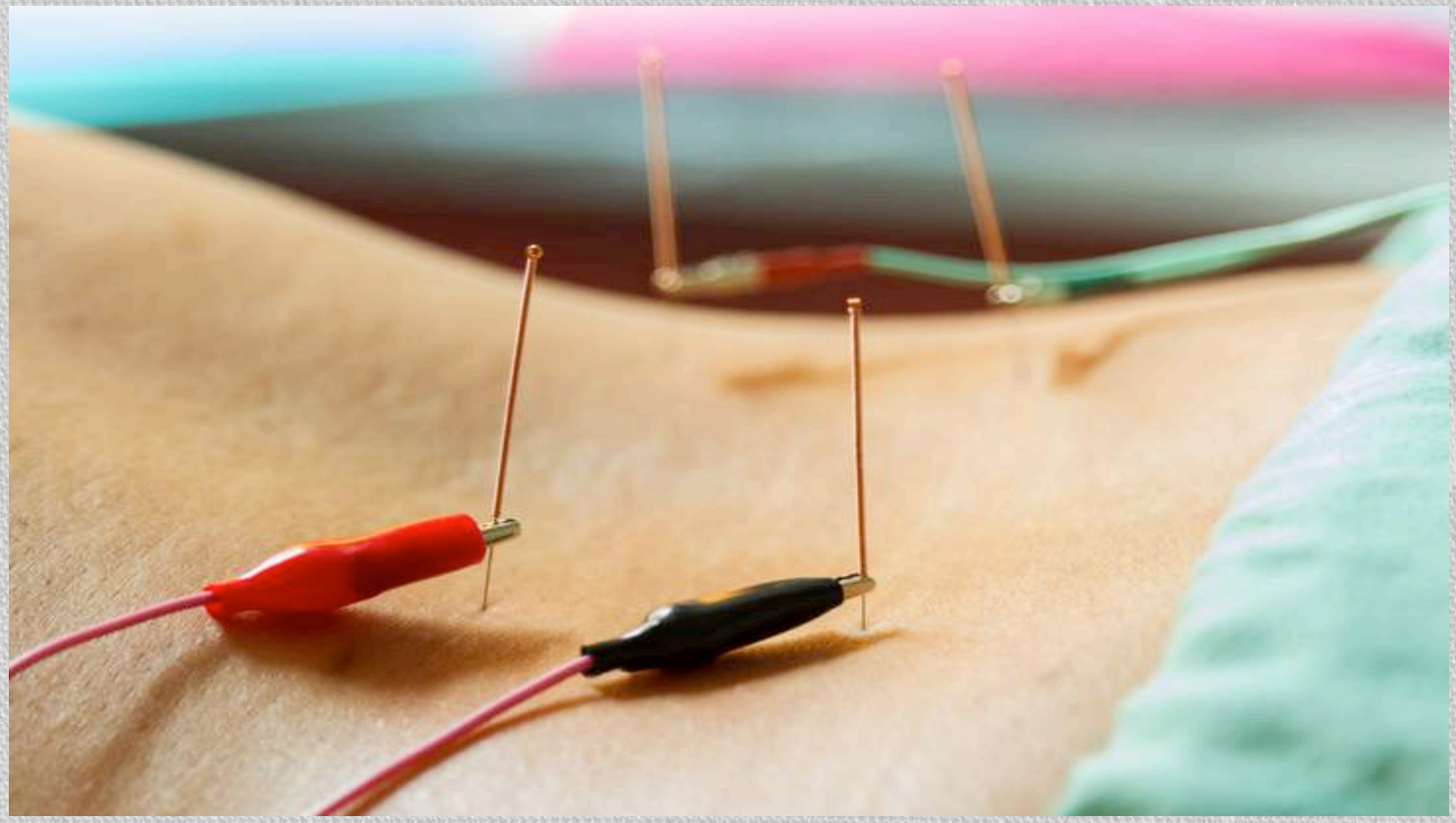
Research Question

Does Traditional Chinese Medicine provide an effective alternative to Western Medicine in attenuating the physiological disturbances and disease progression and the accompanying hormonal variation of estrogen, testosterone, progesterone, oxytocin, cortisol, follicle stimulating hormone (FSH), and luteinizing hormone (LH) commonly associated with aging and the decline of reproductive capacity?

What is Electroacupuncture?

- A form of acupuncture with electrical impulses passing through the needles for the purpose of stimulating nerve tissue.



Why Electroacupuncture?

- Directly and more strongly accesses the neuroendocrine system which governs our hormones.
- Provides consistent controlled stimulation allowing for more objective study in comparison to manual needle stimulation.

Research Population

- Reproductive age women from menarche to onset of menopause.

Biomedical and TCM Concepts of Hormones

West

- Hormones = a natural substance produced by endocrine glands.
- The endocrine system affects a multitude of diverse processes in the body, affecting nearly every organ and cell in the human body. The major physiological processes governed by the endocrine system include, and extend far beyond, metabolism regulation, growth and development, tissue health and regeneration, sexual function, reproductive capacity, mood, sleep and wake cycles, and aging

East

- Yin = substantive = hormones
- Yang = hollow = glands that produce hormones
- Together, the Kidney yin and Kidney yang energies interact with the Essence to function in the same capacity as the intricate and complex feedback mechanisms required to maintain endocrine function and hormonal sufficiency that is equalized and harmonious. Growth, development, reproduction, metabolic and cellular homeostasis, adaptation to external influences, capacity for resistance and healing, aging, and virtually every physiological function required to sustain life is reliant on the Kidney energies.

Why Study Hormones?

- Both systems of East and West agree that reproductive health:
  - Serves as an early indicator of overall health and well-being.
  - Dictates reproductive capacity.
  - Influences aging potential.

What Hormone Imbalance Looks Like

More Hormone Imbalance

And More Hormone Imbalance

Hormone Balance According to Wikipedia

"Hormone balance" does not exist. You can ask for it to be created…"

Hormone Balance According to Me

Finding Balance

Dr. Sara Gottfried, Harvard trained gynecologist and author, describes hormone balance as an optimum state that:

- Protects against excess tension and stress .
- Protects against major manifestations of hormone imbalance such as infertility and premature aging.
- Encourages greater relaxation and stability.

Which Hormones Were Studied and Why?

- 7 hormones were investigated:
  - Estrogen
  - Testosterone
  - Progesterone
  - Oxytocin
  - Cortisol
  - Follicle stimulating hormone (FSH)
  - Luteinizing hormone (LH)

- These hormones impact all physiological processes including growth and development, sexual health, fertility and reproduction, bonding and attachment, and longevity and aging.

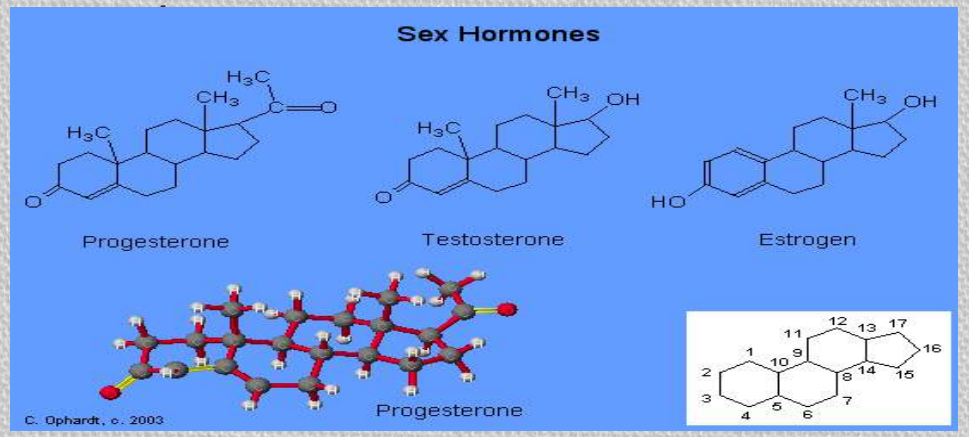
Sex Steroid Hormones

Function

- 1. Estrogen –Primary female sex hormone responsible for development and regulation of reproductive system and secondary sex characteristics.
- 2. Testosterone - Androgenic hormone secreted in small amounts by the ovaries and adrenal glands in women.
- 3. Progesterone - The major progestational hormone secreted by the corpus luteum and placenta in pregnancy.

Dysfunction

- 1. Interference with menstrual cycle and implantation.
- 2. States of hyperandrongenism such as Polycystic Ovary Syndrome.
- 3. Issues with embryo implantation



Gonadotropin Hormones

- 4. Follicle stimulating hormone (FSH) – Helps control the menstrual cycle and egg production.
- 5. Luitenizing hormone (LH) - induces ovulation.
- Both are implicated in cases of infertility.

Wellness Hormones

- 6. Oxytocin – a nonapeptide hormone released from the posterior pituitary gland.
- Influences intimacy, lactation, mother-infant bonding, and social bonding.
- Implicated in halted labor and diminished attachment and pleasure in social relationships.
- 7. Cortisol – an adrenal hormone produced in the adrenal cortex that plays a variety of roles in the body.
- Regulates the cardiovascular system and stress adaptation.
- Dysregulation can suppress immunity, reduce tolerance to stress, and decrease immunity

Biomedical Standard of Care

- Hormone Replacement (HRT)
- Bioidentical Hormone Replacement (BHRT) – bioavailable form of synthetic hormones
- Antidepressants

What Can Be Done?

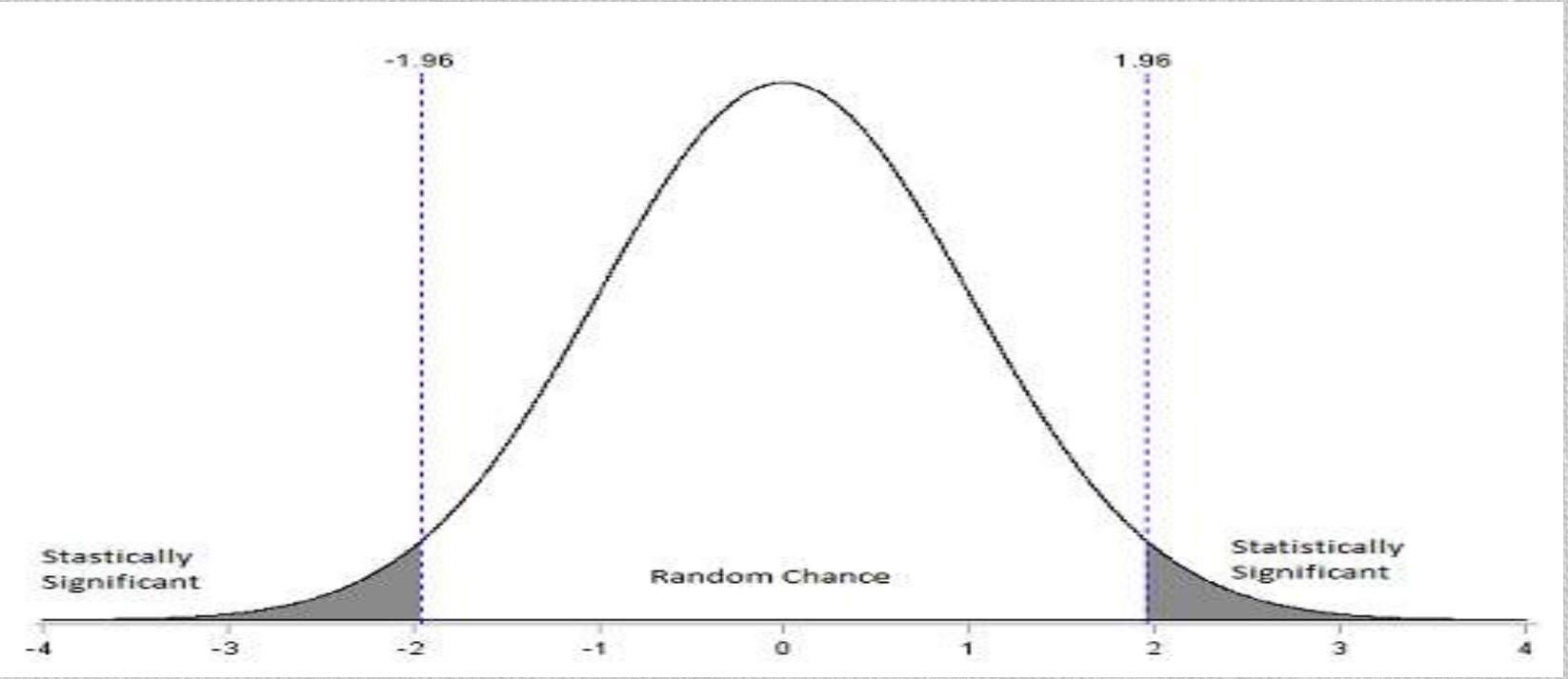
- Any act or practice that is utilized to preserve or enhance Kidney reserves slows premature aging and promotes longevity and fertility.

Research Methodology

- Retrospective literature synthesis performed through Pubmed and Google Scholar.
- Key term searches generated 224 journal articles
- 41 met filtering criteria.
- Inclusion Criteria generated 11 journal articles
  - peer-reviewed
  - full text journal
  - public record
  - written or translated into English
  - published in 2000 or later were included
- 24 individual measures of statistical significance and effect size were investigated.
- Human-control, animal-control, in vitro trials, in vivo trials, and literature syntheses were included.

Summary of Findings

- A substantial regulatory mechanism of Electroacupuncture was demonstrated.
- Statistical significance was determined by p values.
- Practical significance was determined by effect size.



Summary of Findings – Statistical Significance

- 19 out of 24individual measures were statistically significant at a value of $p < 0.01$ or $p < 0.05$.
- 4 measures were found to be non-statistically significant.
- 1 measure had no *p* value provided.
- Directional impact indicated with plus or minus sign.

Statistical Significance Table

Table 1: Statistical Significance Table

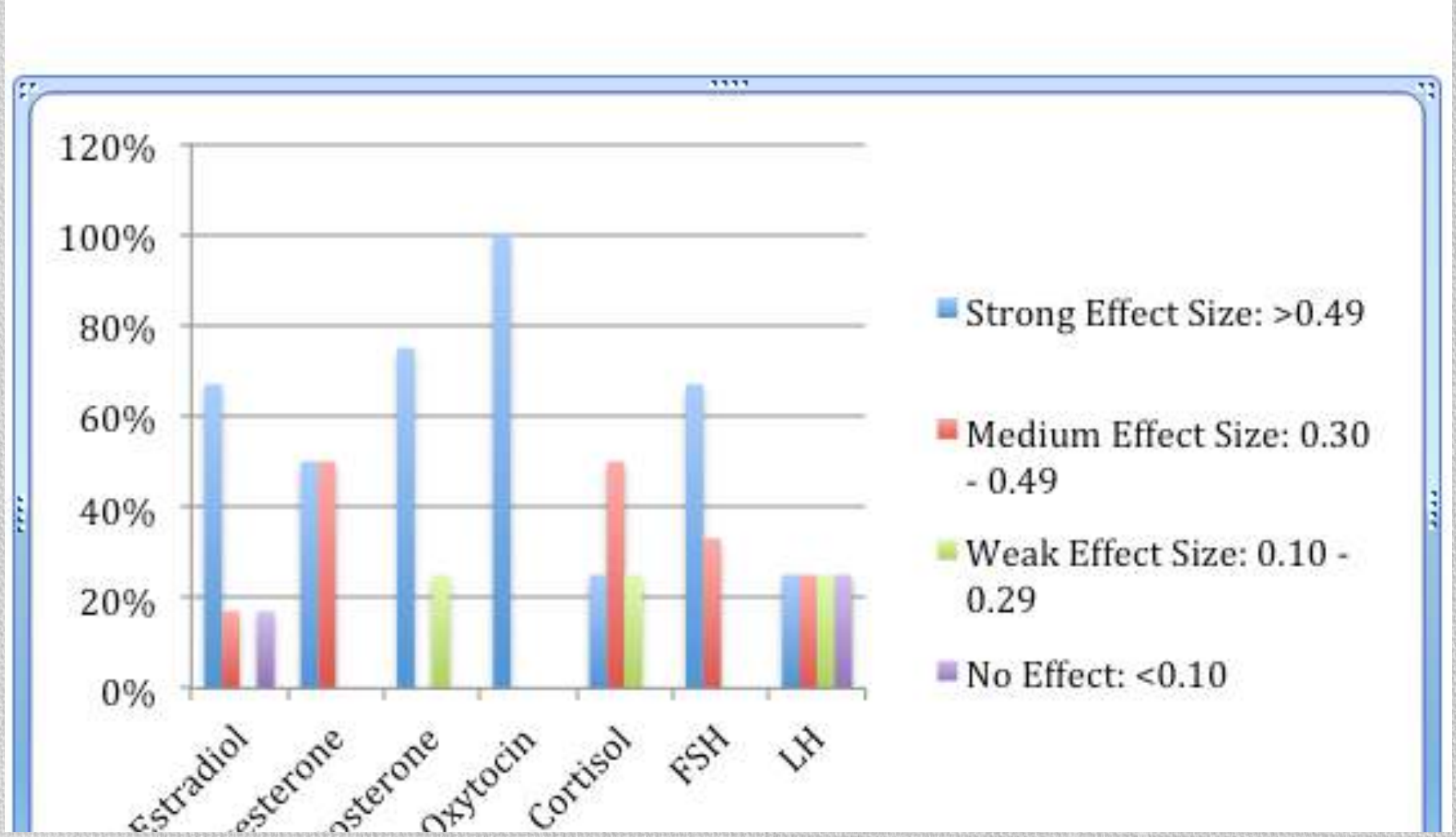
Article Number	Article Name	Estradiol	Progesterone	Testosterone	Oxytocin	Cortisol	FSH	LH
1	Chen, L. et al. 2016	$p < 0.01$ +	$p < 0.01$ +	$p < 0.01$ +				
2	Feng, Y. et al. 2012	NS -	$p < 0.05$ +	$p < 0.05$ -				NS -
3	Jedel, E. et al. 2011	$p < 0.05$ -		$p < 0.01$ -			NS -	NS -
4	Liu, R.P. et al. 2013					$p < 0.01$ -		
5	Parmen, V. et al. 2015					not provided -		
6	Wang, Y. et al. 2016						$p < 0.01$ -	$p < 0.01$ -
7	Yu, J.B. et al. 2014					$p < 0.05$ +		
8	Zhang, H.F. et al. 2015				$p < 0.01$ +			
9	Zhao, H. et al. 2004	$p < 0.01$ +		$p < 0.01$ -		$p < 0.05$ +		
10	Zheng, X. et al. 2015	$p < 0.01$ +						
11	Zhou, K. et al. 2013	$p < 0.01$ +					$p < 0.01$ -	$p < 0.01$ -

Statistical Significance ($p<0.01$, $p<0.05$) = $p<0.05$ or less
Non-Statistical Significance (NS) = $p<0.05$ or greater
+ = EA resulted in increase of hormone
- = EA resulted in decrease of hormone

Summary of Findings – Effect Size

- Medium to strong effect size = 19
- Weak effect size = 3
- No effect at all = 2

Effect Size – How Strong Was the Significance?



Estrogen: Estradiol (E2) - Zhou et al. (2013)

Zhou et al. (2013) investigated the effect of EA on women with primary ovarian insufficiency (POI).

POI is a syndrome occurring in women below the age of 40 experiencing symptoms which mimic menopausal symptoms.

The impact of EA on three vital markers of reproductive function, including serum E2, was investigated.

There was a statistically significant increase in E2 at the end of the three-month treatment period compared to baseline measurements.

Progesterone - Chen, L. et al. (2016)

Chen, L. et al. (2016) investigated ovarian hyperstimulation syndrome (OHSS) in rodents.

Varying degrees of OHSS is a common complication of the ovarian stimulation that is a necessary aspect of Assisted Reproductive Therapy (ART).

Chen, L. et al. (2016) concluded that it's possible that EA moderates the symptoms and progression of OHSS by down-regulating progesterone.

The Opposite is Also True

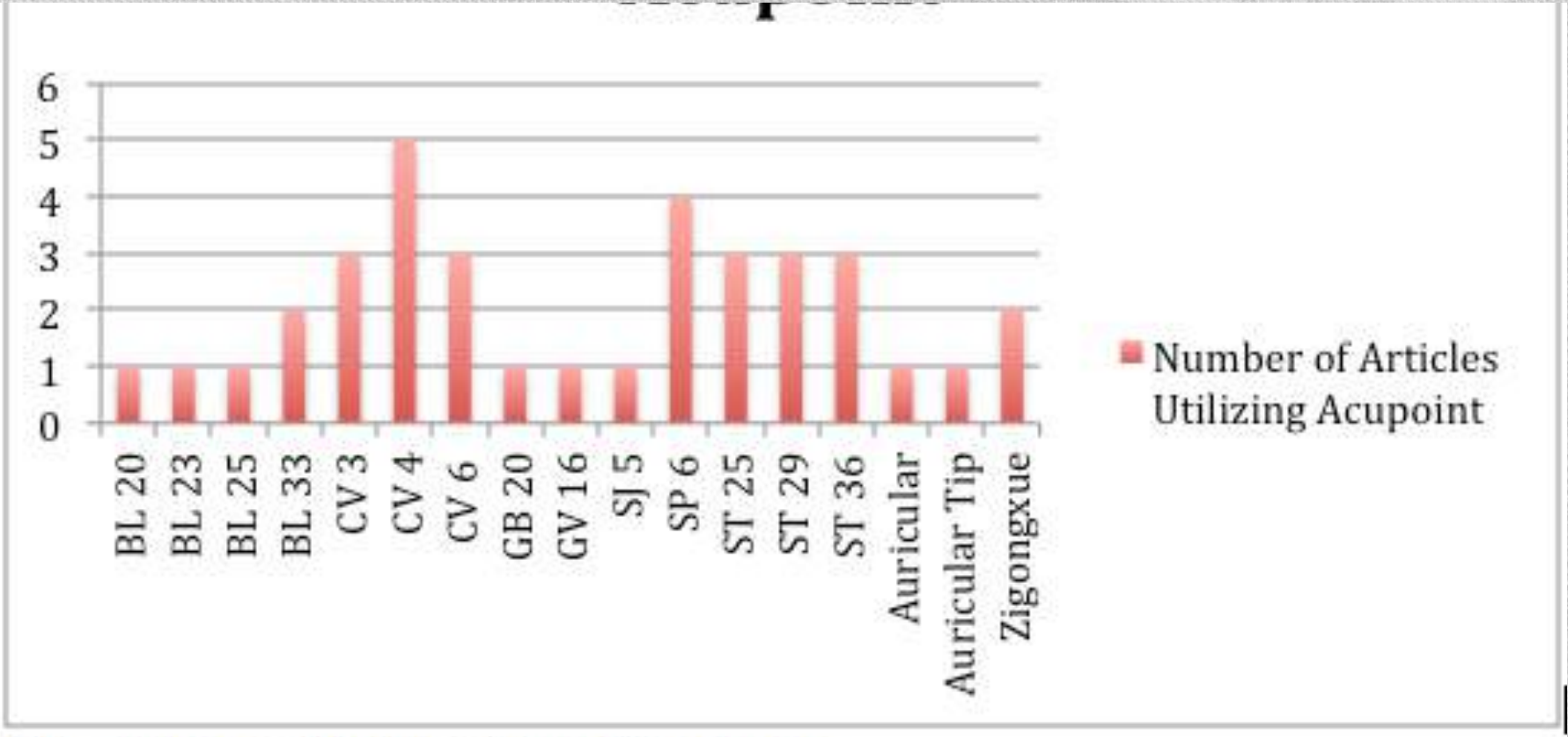
Estrogen is Reduced

*A randomized controlled trial conducted by Jedel et al. (2011) investigating the impact of repeated EA demonstrated a statistically significant reduction in serum E2 in women with PCOS when compared to a no treatment control group.

Progesterone is Increased

*Similarly, an investigation on the effect of EA on clinically induced PCOS models in rats conducted by Feng et al. (2012). In this study, it was discovered that when animals deemed to be non-respondent to treatment were excluded from results serum progesterone was increased by EA.

Acupoints For Hormone Balance



BL = Urinary Bladder Meridian Point
CV = Conception Vessel Point
GB = Gall Bladder Meridian Point

Administration of Electroacupuncture

- 2 hertz milliamp of electricity.
- 20 to 30 minute treatment times.
- Treatment courses ranged from 5 sessions administered over 10 days to 25 sessions administered over 16 weeks.

Practical Implications

- Significant impact on modulation of hormones investigated in the present study and associated processes of disease and dysregulation to varying degrees.
- Safe and beneficial to use throughout the reproductive lifespan.
- Provides a form of adjunct therapy to patients unresponsive to conventional treatment alone.
- Offers alternative treatment that does not involve introducing exogenous hormones or causing further damage to hyperfunctioning endocrine glands.

Future Research

- An explicit amount of the clinical research on EA, and acupuncture in general, is conducted in Asia where TCM remains seamlessly integrated into the contemporary culture and health care systems based upon its origin and extensive history throughout the continent.
- Unfortunately, the science relating to TCM published in Asia is largely untranslated into English, therefore, there is still great opportunity for expansion of this work and compilation.

Thank you