



DEPRESSION IN BUSINESS: HERBAL OR MODERN MEDICINE

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ABSTRACT

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The purpose of this study is to investigate the effectiveness of Hypericum for treating tensions in nowadays commonly business chaos. St. John's Wort and Duloxetine, Cymbalta as both types of medicine are commonly used to treat depression in the business community today. It focused and covered on the possible side effects, chemical compound structure, functionality, background of both medicine. The previous scientific articles, research papers, case studies, patients' reviews and issues regarding to the practice of these two medicines have been reviewed and taken into account as well. By identifying the previous clinical researches, St. John's Wort is safe but less effective due to the unclear evidences. Duloxetine could be safe with presence of safety measures and effective with supporting clear evidences. St John's Wort could only work as alternative medicine for business tensions unless an individual hardly tolerates with Duloxetine. The priority of Duloxetine hence is over St John's Wort in choosing medicine for depression treatment as Duloxetine could be safe and more effective than St John's Wort. By looking at various perspective of both type of medicine provided based on supportive evidences, it concluded that Duloxetine was more reliable and effective than St. John's Wort in treating depression in our modern business community.

Contribution/Originality: This study makes a comparison between herbal medicine and modern medicine based on the evidences above which also had given rise on personal opinion and thoughts towards the regarding statements and statistics.

1. INTRODUCTION

Depression is an emotional disease where one will experience a mix of negative feelings and thoughts due to the problems which occur in one's life. The victims are usually unable to continue with their activities in their daily life and are prone to commit suicide [1]. Depression does not only affect an individual but will also affect one's family, peers and their career as well. People who suffer from depression could be at the stage of adulthood, teenager and even childhood due to various factors around them. According to Harvey [1] the possible symptoms of depression are:

- Sleep disorders
- Physically changes
- Long term sadness, guilt and loss of self-worth

- Being miserable all the time and hardly focus
- Thoughts of death or commit suicide

One of the most common procedures in treating depression for business tensions is by taking proper medication. Currently, there are two types of well-known medicines - St John's Wort and Cymbalta, which are approved by the regulatory affairs. It is stated that these two medicines are effective in treating depression. However, both St John's Wort and Cymbalta are not of the same type of medicines in origin. St John's Wort is a plant (herb) which is produced naturally. Its chemical composition is effectively used to treat depression and has undergone several extraction procedures to transform it as a medication.

On the other hand, Cymbalta is the name of a drug compound, Duloxetine, which is chemically synthesized by chemists. Hence, St. John's Wort is categorized as a plant-based medication. Although it is transformed in the form of pills and capsules, it is still known as a herbal medicine. While Cymbalta is the modern medicine that is used today. In a scientific approach, though both drugs share the same functionality but both the chemical compositions are different. This means that although St. John's Wort and Cymbalta could be used undoubtedly in treating business depression, at the same time, these two medicines might expose different possible adverse events on humans. Therefore, whether or not that both medicines have the same level of effectiveness, or that is more suitable medicine than the other for treating depression victims still remains vague and need to be answered.

2. LITERATURE REVIEW

2.1. Hypericin, St John's Wort

St John's Wort is a type of herbal medicine that is produced from a plant, Hypericin Perforatum. Based on several studies, it is said that it could treat various mood disorders and is believed that its effectiveness could be same as the other antidepressants which helps in relieving one's stress and emotional conditions [2]. Not only that, it does help in moderating the symptoms of an individual who are suffering depression.

2.1.1. Composition and Functionality

St John's Wort consists of Hypericin, Hyperforin, flavonoids and many more. The most well-known chemical compound is Hypericum, which could be found from the leaves and flower of the plant. It is common to the public because most of the extract of St John's Wort would have the labeling of Hypericin, which it turns up to be its second name, Hypericin. However, the main ingredient in treating depression has still not been found yet. Previously, Hypericin was said that it is the main role in St John's Wort, however, today, the scientists would conclude that all these chemical components are taking part in working on the effectiveness. St. John's Wort is able to moderate one's emotion by lowering down the re-absorption of neurotransmitters by the nerve cells which will delay the process of transporting messages to the brain. Neurotransmitters are the messengers which carry information from the nerves to the other cells. After the delivering process, the neurotransmitters are re-absorbed and keep themselves to be in inactive state for further utilization as well as preventing the individual to recall back the same occurrence temporarily so that the suffering victims are able to gain an ease and relieve their stress [2]. Therefore, St. John's Wort is believed that it could regulate and affect the mood by increasing the level of Serotonin and dopamine plus reducing adrenaline which is relatively high in depression.

2.1.2. Side Effects

Although St John's Wort is a natural medicine, however, it still has some adverse effects which possibly affect humans. Some studies have shown that St John's Wort will cause any of our external organs (eyes and skin etc.) to be sensitive towards sunlight or artificial lighting. Besides that, it could lead to Serotonin syndrome which is due to excess Serotonin in our body. Serotonin syndrome would be associated to our body muscles which causes shakiness, diarrhea and hallucination; further serious effects are coma and death. However, photo-sensitivity, Serotonin

syndrome and psychosis [3] are rarely to happened when one has taken St John's Wort [4]. The other possible side effects which affect our internal body condition include dizziness, dry mouth, upset stomach and irritation [5]. However, St John's Wort would not cause any sex dysfunction unlike the other antidepressants [2].

Regarding to the effectiveness and risks of St John's Wort, there are different views and thoughts among professionals, according to Norman and James [6]:

"St John's Wort has shown numerous positive results in several countries...It is better than placebo and could be effective as the other standard antidepressants in major depression of mild to moderate"

Two studies sponsored by NCCIH [7] by which it was found that St. John's Wort was no longer better than placebo in treating depression nor in decreasing the symptoms. Scientists suggested that St John's Wort could prevent reabsorption of chemical messengers and does help moderating mood but unsure exactly how it works (Multum, 2015). They have proven that St John's Wort might help in mild-to-moderate depression but not in severe depressions as experienced by businessmen.

Over the past few years, St. John's Wort has proven on its effectiveness in treating depression. However, it doesn't limit any on-going research work and investigation process. It shows that people are still having doubts on it as a medication for people who are suffering from depression. Recently, the latest study has reported that the adverse reactions of St John's Wort is similar to one of the antidepressant, fluoxetine. The investigation team also warned that herbal medicines are not always safe although it could moderate depression. It is still a drug compound which has possible side effects. Based on their findings, there were 84 reported on adverse reactions to St John's Wort and 447 were reported on the fluoxetine. These are voluntary reports which hardly can be justified. Further the negative side effects of St. John's Wort are usually unreported most of the time [8]. Hence, St. John's Wort does work on depression and might have less side effects compared to the modern medicine, but still the researchers could not make any firm statements on its effectiveness.

2.2. Duloxetine, Cymbalta

Besides St John's Wort, Cymbalta is also one of the common modern medicines that is used to treat depression as well. Based on the report from IMS Health [3] in United States, Cymbalta is the most-prescribed antidepressants during 2013 and 2014. Cymbalta is the brand name of the medicine while duloxetine is the name of the drug compound. It was approved since 2004 and has been widely accepted by the public due to its indifferent chemical properties. Most of the time, it is used to treat major depressive disorders in adults and children [5].

2.2.1. Composition and Functionality

Duloxetine is a chemically synthesized drug compound and belongs to the SSRI group [9] the SSRIs are said to be effective because it helps to increase the amount of norepinephrine and Serotonin in our body [10]. The researchers believe that Duloxetine helps in reducing pain signals by preventing norepinephrine and Serotonin to be reabsorbed into the cells for further usages. Hence, the number of both remained substances in our body increases. Although the presence of norepinephrine would associate with depression, however, the increase level of norepinephrine is insufficient to limit the effectiveness of duloxetine due to the ratio of reuptake inhibition of Serotonin and norepinephrine in human body.

2.2.2. Side Effects

The severe side effects of Duloxetine, Cymbalta includes the liver problems, Serotonin syndrome (mix used with other medicines) and discontinuation syndrome which are rarely happens. On the other hand, the common side effects are serious skin reactions (Allergic, Itchiness, and Swelling), Low sodium level, blood sugar and blood pressure, confusion. However, studies have shown that Duloxetine could also increases the risk of bleeding and bruising, urination problems and even unusual mood swing which might increases the risk of suicidal. Hence, according to Multum [5] and Nordqvist [10] it is advised to always consult to take in a proper medication.

All views and opinions are most likely positive and not much of differences where we can see that people are quite satisfied with the use of Duloxetine in treating their depression in office.

- Average rating of 6.9 in treating depression with Duloxetine, Cymbalta based on 839 reviews [5].
- 4 stars are given for Duloxetine in terms of its safety, satisfaction and effectiveness in treating major depressive disorders.

On the other side, Duloxetine seemed to be dangerous, in a way more than what we have thought. A French medical journal [8] made a statement on Duloxetine of Cymbalta has carried significant side effects but is no longer better than the others. Despite that Duloxetine may really work in treating depression, however, its risk of potential side effects could surpass the level of effectiveness, which in other words, Duloxetine might no longer to be effective. An issue regarding on the safety of Duloxetine was reported due to the high response on suffering serious side effects such as dizziness, anger, weight gain, suicidal thought, burning sensation and even brain zaps which associated with discontinuation syndrome. Based on the clinical studies, half of the patients had experienced the symptoms above and required hospitalization. Consequently, warnings from different agencies were given to the manufacturer on having insufficient safety concerns and provided misleading information of Cymbalta. *Hence, the practice of Cymbalta is still risky due the presence of failure in the manufacturing process and investigation before the actually prescribing the medicine. An effectiveness of a medicine could only be identified after it has undergone numerous research, investigation and experiments. Although some supporting evidences on proving the effectiveness of both medicines have been provided, however, it could only be reliable with proven scientific evidences from an official examination. Both St. John's Wort and Duloxetine have been used by the community and the public has different opinions towards both types of medicine. It has been questioned that whether a herbal medicine could replace the modern medicine in terms of efficacy and safety. It was reported that the sale of St John's Wort is increasing year by year due to wide consumption among the people in western countries and the positive results obtained from the treatment [11]. Not only that, Canadian Network Group had suggested the instruction of practicing St John's Wort in treating mild to moderate and major depression, where numbers of positive results were reported [12]. From the above statements, St John's Wort has been commonly used in treating depression over the past few years and by looking on the significance on its effect, its effectiveness is reliable. It also indicates that the preference of people on various type of health treatments begin to change where modern medicine might not be their first choice.*

Nowadays, people are often prone to food and supplements which are said to be 'natural'. This does happen when they are choosing medicine as well. Most of the time, people who go for herbal medicine, are assuming that herbs are extracted and made naturally which would have less or no side effects on humans. It is believed that the determination of choices is mainly due to the trend and separation of thoughts instead of considering the suitability of the medicine towards the patient [13]. Due to the advancement of technology, people could share and obtain information easily. The changes in trends of thoughts, behavior and action of an individual could easily get influenced from the others. Hence, advertising and promoting activities are important in 'educating' the consumers which could result in a large consumption among the community.

Since people believe that herbal medicine could be as effective as the modern medicine, therefore, in other words, herbal medicine could be considered as a drug compound as well. Researchers believed that Hypericum and Hyperforins will stop the activity of transferring information in our nervous system while flavonoid glycosides will have similar function but mainly act as co-effectors [11]. Moreover, Qureshi and Abdullah [12] had also said that Hyperforin and Hypericum are the main substances in St John's Wort which are able to treat depression. St. John's Wort is originally a medical plant which exists in a form of combination of various chemical compounds, contains different types of elements. It is similar to the modern medicine as well. The difference is where herbal medicine is extracted from a plant which grows in a natural environment and further to be extracted and modified, unlike modern medicine, which is synthesized by human. Both types of medicine have different chemical elements and structure, but still, both are chemical compounds. Although St John's Wort is a herbal medicine, its components

might trigger any form of activity which could possibly lead to side effects. [Firenzuoli and Luigi \[13\]](#) had suggested that the current herbal products on the market might contain the same ingredients and work similar but the difference in level of concentration will affect the internal activity in our body. Moreover, *the functional ingredients in St John's Wort will affect the victims to suffer various types of side effects and some are even associated with further severe conditions [14]*. Hence, the safety use of medicine is also important in determining the effectiveness. If one medicine can be effective on its adverse reactions than its healing properties, then the medicine is said to be not effective towards the disease as patients will be suffering more on side effects which may even worsen the condition.

However, based on the study on functions of Hypericum with several types of organisms, it was shown that St John's Wort does not have cytotoxic effects and harmful actions on organisms at any time based on concentration and treatments. Even though certain side effects were present but they were not harmful [\[11\]](#). Furthermore, there was a study which compares the side effects of St. John's Wort and the main classes of antidepressants. The clinical study had shown that St John's Wort was less harmful compared to the common antidepressant; patients had experienced milder adverse reactions not only during their on-going treatment, and even after they had discontinued the treatment; St John's Wort would not contribute any serious effect in over-dosage, unlike the other antidepressants by [Morien \[15\]](#) in the Herbs Research Foundation. Hence, taking St John's Wort as the medication in treating depression would be safe, instead of taking the other drug compounds. Patients could be less bothered by not suffering discontinuation syndrome, the common side effect in most of the antidepressants, after they had fully recovered. Unfortunately, the researcher had also mentioned that results shown could not be fully reliable due to the presence of drawbacks in the investigation process. Therefore, data obtained above could be used as reference but it is not a strong evidence to prove that St John's Wort is safe to be used. Although the above research work may not be accurate, however, it had concluded that the serious side effects which are common in antidepressants are absent in St John's Wort, which is a great benefit in using St John's Wort as medication. Hence, St John's Wort is still considered to be less risky and safe.

Based on the selective review on the Evidences for the Effectiveness of Herbal Medicine by EHTPA, it is stated that St John's Wort has less side effects than the common antidepressants. The antidepressant effect of the plant is mainly due to the active compound which is present in St John's Wort [\[16\]](#). This review had evaluated several research work and papers and had highlighted reliable important evidences from it.

- Cochrane Review of St John's Wort for Major Depression

The effectiveness of St John's Wort is similar to the standard antidepressants. However, it has less side effects compared to the antidepressants [\[17\]](#).

Currently, St John's Wort had been used in primary mental health care but it is often used as the second choice of treatment due to its potential side effects [\[12\]](#). Although, several studies have been shown that St John's Wort has less and mild side effects, however, it seems like the practice of herbal medicine is less common in hospitals and medical fields but more common in families. In medical field, the use of chosen medicines must be supported with relevant scientific evidences and approval by the professionals. By reviewing the previous studies on St John's Wort, results shown were more on justified the safety and side effects of St John's Wort instead of the effectiveness towards depression. In other words, St John's Wort might be safe to be used with less side effects but still its effectiveness remained questionable. [Qureshi and Abdullah \[12\]](#) suggested that St John's Wort could be as effective as the common antidepressant with less non-harmful side effects and there were patients who were able to associate well with the symptoms of depression and had shown a great improvement in long-term treatment in the study. However, currently, there is no relevant studies and result to prove the above statement. Therefore, St John's Wort requires further research in order to determine its effectiveness among the other modern medicines.

On the other hand, although there are multiple choices of treatment available for people, however, until now, modern medicine is still being on the mainstream in treating various diseases including mental disorder. In the current community, hospitals, clinics and any health institution still use antidepressants drug compounds to treat

patients. Antidepressants have undergone evolution and the latest generation of drugs are the SSRIs such as duloxetine. SSRI works better than MAO [14] as the effect is long-lasting, not dangerous in permanent therapy of depression, plus, helps in lowering recrudescence [6]. SSRI is a group which consists newly formed of drug compounds where its functionality has integrated and strengthened its effect in treating depression. Among the antidepressants, duloxetine is much more effective and safe to be used [18]. However, some researchers believed that duloxetine works similar than the other SSRI and based on recent review, there's no exact data that shows its superiority over its group members [6].

The effect of duloxetine is shown by preventing the reabsorption of Neurotransmitters and it is excreted by liver within a short period [6]. Duloxetine helps in prolonging the progress of delivery information to the receptor which enable the patient to be less stressful and relax at the same time. After it has completed its role, the chemical substances in duloxetine would not remain in the body and will be excreted immediately. Unlike the other chemical compounds, it will not cause any burden to the kidney and any other essential organs in our body. Hence, duloxetine is really helpful and suitable for either short term or long term treatment.

However, its side effects could not be neglected. Mostly, in all the scientific reports and studies, practice of duloxetine would result in victim to suffer the adverse events and each and every individual would have different possible side effects. Studies had revealed that an average [6] 20% of patients had withdrawn from the above test due to the occurrence of side effects on them [9]. It is believed that the side effects brought by duloxetine could be really irritating and harmful where a certain group of patients hardly completed the treatment in a given period. Although duloxetine might be effective in a certain way, but the patients might have suffered more than experienced any improvements on themselves. Still, the researchers believed that duloxetine is effective towards a greater number of patients as the side effects are not risky [6]. At this point, duloxetine is effective to most of the people, in another words, duloxetine is not effective towards a certain group of people.

Throughout some clinical trials and research, Norman and James [6] had discovered that newly formed side effect tend to occur in on-going treatment, at the same time, the adaptation towards the side effects increases as well. Duloxetine is effective in long-term treatment but the patients have high possibility in suffering different types of side effects which might affect their livelihood. It also had proven that duloxetine will increase the tolerance of patient towards the side effects as well. Hence, a depressed patient might experience a few numbers of side effects but would be able to tolerate with the above events to take place. However, the level of tolerance impaired and level of severity of side effects detected by an individual are different from one and another where duloxetine might be suitable or not suitable towards a certain group of people in long-term treatment of depression.

Besides that, it was discovered that the level of dosage of duloxetine would associate with its adverse events plus the severity of adverse events depend on the daily practices and cultural features of a group of populations but age is not the factor of it Lee, et al. [9]. Most of the side effects happened may not be fully due to the properties of the medicine but the amount of dosage where the patient should be given a proper dosage in order to reduce the side effects. Furthermore, body characteristics and living habit would influence an individual to be more tolerate with the side effects occurred. For example, nausea and weight loss, a common side effect of duloxetine. It was found that patients seldom experienced nausea with high BMI [9]. Therefore, in order to achieve the effectiveness with duloxetine, a patient should be given a proper dose of medication and assort with a proper diet to increase the tolerance and reduce the side effects.

According to an important finding suggested by Moser [19] effectiveness of St. John's Wort was similar to Duloxetine in treating mild depression but Duloxetine had shown a stronger effect in treating major depression, compared to St John's Wort.

3. METHODOLOGY

This study was basically a descriptive study on the effectiveness of herbal medicine and modern medicine used in treating depression caused by daily businesses. The data and information used involved basic theory and facts of drug compounds, patient's review, related issues and articles plus results and data obtained from previous research papers. Throughout this study, a comparison has been made between herbal medicine and modern medicine based on the evidences above which also had given rise on personal opinion and thoughts towards the regarding statements and statistics. The conclusion of the research was made by evaluating the summary of combination review.

The method chosen was because of insufficient knowledge in related fields to make any judgment and conclusion. It was also due to lack of ability in handling drugs and conducting an experiment. Besides that, as it was a narrative form of study and did not apply any scientific method, the result and conclusion made might be questioned. However, in order to enrich the validity of this research, the data and information obtained were collected from official sites of authorities in pharmaceutical fields.

4. ANALYSIS

St. John's Wort was safe as the medication used in treating depressive disorders but mainly in mild-to-moderate depression. In addition, justification made on St John's Wort were mostly review-based instead of undergoing a scientific procedure or experiment, plus, the method of data collection and analysis consisted a few errors and drawbacks in which the results tabulated shown was less persuasive towards the audience. On the other hand, Duloxetine does work in treating depression especially major depression. Although Duloxetine had significant side effects in all clinical studies, however, methods of adaptation towards it were available. There were also limited scientific trials in testing the functionality of Duloxetine but each and every test had a specific protocol and measured system which increased the accuracy of the study. Hence, results and data obtained were reliable.

5. FINDINGS

The Comparison between Hypericum, St John's Wort, Duloxetine and Cymbalta presented in Table-1.

Table-1. Comparison between *Hypericum*, St John's Wort, *Duloxetine* and Cymbalta

	Hypericum, St John's Wort	Duloxetine, Cymbalta
Origin	Natural environment	Chemical process
Working mechanism	Similar	Similar
Side effects Severity Divergence	Less significance Possible range from low to moderate Rare	Significance Possible range from moderate to high Often to be seen in long-term treatment
Safety Methods to improve safety usage	Highly safe Absent as patients tolerate well with the side effects.	Less safe Present. Side effects are reduced by increasing tolerance level associates with multiple factors.
Efficacy	Less evidence	Evidence-proven

Source: Ehrlich [2].

6. CONCLUSIONS

St John's Wort is a herbal medicine while Duloxetine is a modern medicine. Although the origin and chemical structure of both medicines is different, it doesn't mean that St John's Wort is always safe and Duloxetine is a dangerous medicine, plus, the working mechanisms is similar. St John's Wort and Duloxetine are still considered as a drug compound where both give out positive and negative effects at the same time. Based on users review and related articles, not only patients, the researchers and scientist have different opinions regarding the efficacy and

safety of both medicines. Hence, whether to choose St John's Wort or Duloxetine as medication to treat depression, it is still highly depending on one's level of sensitivity and compatibility with the medicine used.

By identifying the previous clinical studies and researches, St John's Wort is safe but less effective supported by unclear evidences. Duloxetine could be safe with presence of safety measures and effective with supporting clear evidences.

In conclusion, St John's Wort could only work as alternative medicine unless an individual hardly tolerates with Duloxetine, hence, the priority of Duloxetine is over St John's Wort in choosing medicine for daily depression treatment as Duloxetine could be safe and more effective than St John's Wort.

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GLOSSARY AND ABBREVIATION

1. **Adrenaline** : Hormone secreted by adrenal glands which coordinate in sympathetic situation
2. **Brain zaps** : Experience of a sudden shake and vibration
3. **Co-effector** : An inducer or enzyme that controls, activate or inactivate a process
4. **Dopamine** : Act as neurotransmitters and precursor in human body
5. **Flavonoid** : Act as antioxidant which is mainly found in plants
6. **Hyperforin** : A phytochemical which produced by St John's Wort. One of the active ingredient in St John's Wort
7. **Hypericin** : One of the active ingredient in St John's Wort
8. **MAO**: Monoamine Oxidase Inhibitor ; A medication used in treating depression by removing neurotransmitters in the brain.
9. **NCCIH** : National Center for Complementary and Integrative Health, United States
10. **NIH** : National Institute of Health, United States
11. **Norepinephrine**: Noradrenaline. Act as hormone and neurotransmitter
12. **Psychosis** : A severe mental disorder where thoughts and emotions are lost contact with external reality
13. **Serotonin** : Monoamine neurotransmitters which is found in human nervous system
14. **SSRI** : Selective Serotonin Reuptake Inhibitors.

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