

## Herb-Drug Interactions: A Systematic Review

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### Abstract

Currently world is looking towards alternative medicine or traditional Practices which are practiced widely for lifestyle disorders or for palliative care. Publicity and Marketing of Systems of traditional practices has been increased since a decade. Each System of Medicine is scientifically evident and is practiced either alone or along with Allopathy medications either on advise or by self-believing that medicines of alternate System are safe and can be taken along with modern medications. Here is a Systematic review on herbs which are used widely in traditional practices and their potential actions along with their possible interactions with drugs or pathways.

**Keywords:** Herb-Drug Interactions; Traditional medicine; Adverse effects.

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### Introduction

Complementary and Alternative Medicines (CAM) are currently gaining attention due to its wide approach and efficacy.<sup>1</sup> Popularity of these systems has now increased its global demand and production of Herbal and Herbo-mineral medications.<sup>2</sup> The popularity among these medicines is also a due to the fact that these medications are labelled as safe, effective and can be taken with contemporary medicine too.<sup>3</sup> Patients continue to take these medications with or without consultants advise for longer periods. This ideology has led to erroneous complications like herb drug interactions if not properly administered.

Herbal medications are now being labelled as supplements and are advised in many conditions along with medications which may lead to either enhanced drug actions or suppression of action

or even organ damage<sup>4</sup>. Herbs can pose either synergistic action or adverse drug reactions in the form of Food-herb, herb-drug or Food- drug reactions<sup>5</sup>.

### Causes for the herb-drug interactions<sup>6,7</sup>

1. General human perceptions is that products of, herbal origin, herbal drugs and their supplements are usually safe.
2. Pharmacokinetics and pharmacodynamics, potentiality and incidences of adverse reactions like herb-drug interactions are unknown or have little information.
3. Herbs contain multiple ingredients, some of which are natural buffers while herbal extracts contain active, unstable chemical constituents, which may have a high chance of adverse reactions.

4. Lack of evidence pertaining to the studies, dose and route of administration of herbs, herbal formulations and herbal drugs.
5. Lack of standardization, and issues like difficulty in authentication of species, substitutes, adulteration and presence of contaminants.
6. Family physician may not be aware of the use of herbal supplement by patients and also knowledge about the herb-drug interaction may differ from place to place.

#### *Types of herb-drug interactions*<sup>8,9</sup>

1. Synergistic and antagonistic
2. Positive and negative

The herb-drug interactions may involve having a herb component which may cause an increase or decrease in the amount of drug in the blood stream by altering the ADME (kinetic interaction) of a drug and by antagonizing or synergism (dynamic interaction) of the effects of a drug.<sup>10</sup> Elderly population is more likely to use both conventional and herbal medicines. This population also possesses a higher incidence of chronic disease, which requires the use of progressively advanced typical drug therapy. As such, the potential for herb-drug interactions increases in elderly population.<sup>11</sup>

#### *Objective*

To find out the significant use of herbal drugs or medicines with contemporary medicines in management of lifestyles disorders or any other.

#### **Materials and Methods**

Present paper is based on systemic review of 80 research papers, titles and reports published in peer reviewed medical indexed journals. Articles were searched using various databases like Dhara, Medline, Research Gate, Wiley Online, Scopus & Pubmed were used to search articles. Literature search was relevant to the herb drug interactions and lifestyles disorders and other disease.

#### **Results**

*Review was done concentrating on the following Points –*

1. Diseases where most commonly herb and drugs are used together.
2. Common Herbs which are used along with contemporary medications.
3. Herb Drug interactions.
4. Side effects or Untoward effects seen during the course?
5. Is there any Synergistic effect to control the disease or Is there any worsening of the disease after consumption?
6. Is there any reduction in the dosage of contemporary medicine after taking herbal medicines?
7. Precautions and Diet followed during such herb-drug intake.

#### **Discussion**

##### *Diseases where most commonly herb and drugs are used together*

Combination of Drugs and herbs are mainly seen in lifestyle disorders - Diabetes mellitus, Hypertension, Obesity and other ailment like, Sexual disorders, insomnia and malnutrition<sup>12</sup>. Most of the time in above conditions, patients take medications over the counter sale or without the consultation or continue the same medications prescribed by the consultant for longer period without regular follow up.

In most of the conditions like- Neurological- Parkinson Disease,<sup>13</sup> paralysis, or any neurodegenerative conditions patient take herbal medicines after consultation with supervision on both the drugs. In Cancer<sup>14</sup> or complications of Cancer or cancer therapy patients are approaching more on traditional medicine due to the untoward complications

##### *Common Herbs which are used along with contemporary medications.*

**Table 1:**

Herb/Drug	Botanical Name	Part Used	Used For
Shunti	<i>Zingiber officinale</i> Roscoe	Tubers/powder	
Pippali	<i>Piper Longum</i> linn	Fruits/powder	
Guduchi	<i>Tinospora Cordifolia</i>	Stem/Powder	
Yashti Madhu	<i>Glycyrrhiza glabra</i> Linn	Root/powder	

Herb/Drug	Botanical Name	Part Used	Used For
Haritaki	<i>Terminalia chebula</i>	Fruit/powder	
Chitraka	<i>Plumbago Zeylanica</i>	Root/Powder	
Musta	<i>Cyperus Rotundus</i>	Tuber/powder	
Vacha	<i>Acorus Calamus</i>	Tuber /powder	
Nimba	<i>Azadirachta Indica. A. Juss</i>	Panchanga	
Amalaki	<i>Emblica officinalis</i>	Fruit/powder	
Chandana	<i>Santalum Album linn</i>	Heartwood	
Maricha	<i>Piper Nigrum</i>	Seed powder	
Hingu	<i>Ferula foetida</i>	Resin	
Bala	<i>Sida Cordifolia</i>	Root powder	
Eranda	<i>Ricinus Communis. linn</i>	Panchanga	
Trivrut	<i>Operculina turpethum</i>	Root/powder	
Manjishtha	<i>Rubia Cordifolia</i>	Root/Powder	
Ashwagandha	<i>Withanania Sominfera</i>	Root powder	
Mesha Shrungi	<i>Gymnema Sylvestre</i>	Leaf/powder	
Musali	<i>Curcugo orchioides</i>	Tuber/Powder	

### Herb-Drug Interactions

Current article focused on herb drug interactions mainly seen in Cardiovascular disorders. Psychiatric Medications, Neurological/Neurodegenerative disorders, Diabetes, Chronic Constipation and Cancer Therapy. Following outcomes were noted in these.

#### i Herb-Drug Interactions in Cardiovascular Disorders:

a. **Anti-Coagulants:**<sup>15</sup> Warfarin and other Ceoumarin anticoagulants are routinely used in the current practice.

i. **Garlic**<sup>16</sup> (*Allium sativum*) interfere with platelet function in in-vitro studies and known to increase risk of bleeding when given together.

ii. **Ginger**<sup>17</sup> (*Zingiber officinalis*) reduces the oral absorption of Antacids. Studies have shown Anti-platelet activity hence might increase the action of warfarin and increased tendency of bleeding. It increases action of Nifedipine.

iii. **Sarpagandha**<sup>18</sup> (*Rauwolfia serpentina*): is known to reduce the blood pressure and increases the risk of Hypotension.

ii **Anti-Diabetics:** Herb-Drug interactions seen more in diabetes (Insulin dependent and non-dependant) as patient tend to approach traditional medications and continue to take both.

a. **Aloe Vera, Aloe Barbadensis** leaf juice, Bitter melon, Karela (*Momordica charantia*)

are known for reducing glucose tolerance without increasing insulin levels.<sup>19</sup>

b. **Fenugreek (*Trigonella foenum*)** is commonly used Hypoglycemic agents to control the Glucose.<sup>20</sup>

iii. **Laxatives:** Bulk laxatives and Intestinal Motility promoters are practiced in commonly. These medications should be carefully given in cardiac patients.

a. **Senna, Triphala, Haritaki, Ricinus Communis oil** are commonly used medications as laxative.<sup>21</sup>

iv. **Neurological and Neurodegenartive diseases:**

a. Ashwagandha, Brahmi, Jatamamsi, Bala, Amalaki, Bhrungaraja are commonly used along with Herbo Mineral Drugs. These medications are given under supervision and found effective in management.<sup>22</sup>

v. **Sexual Disorders:** Traditional medications are most opted in Sexual disorders and Ashwagandha, Bala, Kokilakasha, Musali, Kapikachu Shilajitu, etc are most regulary and commonly used in Sexual debility or disorders. These drugs either contain Natural phytosteroids<sup>23</sup> or have multisystem actions and should be carefully given.

#### Side effects or untoward effects seen during the course

Proper reports or Proper investigations are not there to report this as most of the time patient doesn't tell about the supplements and herbal medications to the consultant unless asked. Even though there

are reports of Adverse reactions, side effects are reported in journals, it shows negligence on the part of the patient who purchase medications without any consultation or consult and don't follow up the doctor and takes years together.

Proper education is required about the type of formulations, Combinations, Purpose of giving each medications, duration of medication course, follow up should be properly explained and if documented, will be beneficial for patient and doctor also.

### *Synergism or Antagonism*

Review of articles showed that, most of the article published showed Synergistic effects of Herbal/Herbo-Mineral medications mainly in Diabetes, Sexual disorders, Neurodegenerative disease. Reports on Diabetes and other lifestyle disorders showed better results in the management of complications and reduction along with contemporary medications.

### *Reduction of Medicine Dosage after Herbal supplement*

In current review, there was no sufficient reports to confirm that dosage of the medicine was reduced after herbal supplement. Most of the neurological conditions like Parkinson disease, Hemiplegia where medications were said to be replaced but need further investigations. In Thyroid disorders and PCOS Medications were said to be reduced after using herbal medications. In Diabetes patients are said to maintain the same dose for longer durations with the help of herbal medications.

### *Precautions and Diet followed during such herb-drug intake*

Current review was unable to come to any conclusions on the above point as there were no reports of diet restriction or precautions explained to the patients nor any follow ups in these patients.

### **Conclusion**

Currently, multidisciplinary approach to lifestyle disorders is increasing more and patients are now approaching to traditional medicines. Increased usage of herbal medicines now seen in both developing and developed countries with or without the knowledge of Herb-Drug interactions. Integration of the different medical system is the need for the hour to combat lifestyle disorders and knowledge of herb-drug medications should

be established and separate regulations should be made in order to make it more sustainable.

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