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### Weight Loss Medications: A Promising Approach for Obesity Management

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#### ABSTRACT

Obesity can lead to a complex range of diseases including diabetes, hypertension, osteoarthritis, certain types of cancer, and heart disease. It is now identified as the second leading preventable cause of death after cigarette smoking. Obesity and overweight occurs due to imbalance between calories consumed and calories utilized. Weight loss drugs, also called anti-obesity medications that help to reduce weight. Obesity drugs may be used in adult patients at medical risk from obesity BMI 30 or greater, or overweight patients with established BMI 27. The ideal anti-obesity drug would produce sustained weight loss with minimal side effects. These drugs alter one of the fundamental processes of the human body, weight regulation, by altering either appetite, or absorption of calories. In past years, numerous drugs have been approved for the treatment of obesity. However, most of them have been withdrawn from the market because of their adverse effects. Hopefully, more effective and better tolerated anti-obesity drugs will be developed through an improved understanding of the multiple mechanisms and complex physiological systems targeting appetite.

**Key words:** Obesity, anti-obesity drugs, weight loss, side effects.

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## INTRODUCTION

Obesity is a chronic condition that affects many people. If you are struggling with excess weight, you may find that a healthy eating plan and regular physical activity help you lose weight and maintain weight loss over the long term. But if these lifestyle changes are not enough, prescription medications for obesity treatment may be a helpful part of your weight-control program. When combined with healthy eating and regular physical activity, prescription obesity drugs may help some people lose weight and improve their health.

- Obesity is defined as a body mass index (BMI) of 30 or more<sup>1</sup>, where a person's BMI is defined as their weight in kg divided by the square of their height in metres. Overweight is defined as a BMI between 25 and 29.9.
- Overweight and obesity are diseases in which an excess of body fat has accumulated such that health may be adversely affected<sup>2</sup>. They can cause and exacerbate many health problems, both independently and in association with other diseases
- Overweight and obesity are serious medical problems that affect over 55% of the adult Population
- A weight loss of between 5% and 10% of the initial body weight reduces the health risks associated with obesity. The aims of treatment for overweight and obesity should be modest weight loss maintained for the long term, with treatment methods and goals being decided for each individual after careful assessment of the degree of overweight.
- The first-line strategy for weight loss and its maintenance is a combination of supervised diet, exercise and behaviour modification<sup>3</sup>. These approaches must be pursued through out treatment even when adjunctive therapies are used.
- Anti-obesity drugs may be used in adult patients at medical risk from obesity (BMI 30 or greater), or overweight patients with established (BMI 27)
- Not all obese patients respond to drug therapy. An anti-obesity drug should therefore be prescribed for no longer than 12 weeks in the first instance and weight loss should then be measured. The drug treatment should be stopped in those obese patients who have not achieved a 5% weight reduction after 12 weeks of drug treatment.
- If a 5% weight loss is attained then the drug may be continued beyond this initial period, provided body weight is continually monitored and weight is not regained. Rapid weight regain is common after short-term use of anti-obesity drugs (12 weeks or less).
- The duration of treatment with an anti-obesity drug must never exceed the time period recommended by the product licence for the drug.

- Prescribers of anti-obesity drugs must be aware of their possible adverse actions. When assessing the suitability of a patient for drug treatment, it is important to consider the risk/benefit ratio, remembering that while medical benefits from moderate weight loss are high, drug therapy is not without risk.

## **Non Pharmacological Management of Obesity**

### **Dietary intervention:**

Understanding of the role played by energy intake in the aetiology of obesity is confounded by failure to report food intake accurately. Under-reporting is widely recognised as a feature of obesity, with comparisons of energy intake and expenditure showing a consistent shortfall in self-reported food intake of approximately 30% of energy requirements. An initial assessment of any patient with a weight problem must therefore include a dietary review and appropriate dietary advice.

### **Lifestyle intervention**

Behavioural interventions use strategies to facilitate change in an individual's lifestyle. Behavioural weight control programmes encourage patients to become more aware of their eating and physical activity, focusing on changing the lifestyle and environmental factors that are controlling behaviour. The key difference between behavioural methods and other forms of treatment for obesity is that they lay particular emphasis on personal responsibility for initiating and maintaining treatment rather than relying on external forces.

### **Physical activity**

The most variable component of energy expenditure is physical activity, representing 20–50% of total energy expenditure, so an analysis of physical activity of an individual should be a critical element of any therapeutic assessment. Cross-cultural studies of physical activity and BMI demonstrate a sevenfold increased risk of overweight (BMI >25) in those with a low physical activity ratio (total energy expenditure/resting metabolic rate (RMR)). Thus, the primary intervention for overweight and obesity should also emphasise the need for an increase in regular physical activity.

The clinical assessment of an overweight or obese patient is by measuring.

- Height and weight: calculate BMI
- Waist circumference
- Neck circumference
- Blood pressure and resting pulse rate

**Check for**

- Any evidence of cardiac valvular disease
- Any evidence of pulmonary hypertension, corpulmonale or congestive cardiac failure
- Signs of dyslipidaemia
- Signs of thyroid disease
- Ophthalmic evidence for sustained hypertension or diabetic retinopathy in a diabetic patient
- Any evidence of diabetes mellitus

## Body weight related health risk

- Established coronary heart disease (CHD)
- Other atherosclerotic diseases
- Type 2 diabetes
- Sleep apnoea
- Gynaecological abnormalities
- Osteoarthritis
- Gallstones
- Stress incontinence

**Who may use obesity medications?**

Health care providers often use the body mass index (BMI) to help decide who may benefit from weight-loss drugs. BMI estimates overweight and obesity based on your height in relation to your weight<sup>4</sup>. Your doctor may prescribe you a medication to treat your obesity if you are an adult with

- a BMI of 30 or greater OR
- a BMI of 27 or greater and you have obesity related medical problems, such as high blood pressure, type 2 diabetes, or high cholesterol

When prescribing anti-obesity medication<sup>5</sup>, the doctor needs to:

- Ensure lifestyle changes have been implemented
- Abide by the prescribing guidelines
- Provide information on the mechanisms of action and the side effects of the drug
- Discuss their own and the patient's expectations from the drug treatment
- Provide information about the 'rules' governing the continuation of drug treatment
- Ensure the appropriate level of support can be offered alongside the drug treatment

When requesting anti-obesity medication, the patient needs to:

- Ensure that they are well informed about the drug: its potential for weight loss, the side effects

and the conditions of use

- Accept that lifestyle changes need to accompany drug therapy
- Set realistic goals for what they want to achieve with drug treatment

### **Important Points to Note While Using of Weight Loss Drugs**

- Do follow your primary care provider's advice about weight-loss drugs.
- Don't obtain medications over the Internet.
- Do use weight-loss medications to reinforce your lifestyle change program.
- Don't think the drugs will work by themselves to replace a diet and physical activity program.
- Do know the side effect profiles and precautions in using any medication.
- Don't continue medications if you are not losing weight after a trial (usually 12 weeks).
- Do discuss other medications you are taking with your doctor when considering weight-loss medications.
- Don't take weight-loss medications during pregnancy.

### **Anti Obesity Drug Therapy**

Obesity is not a single disorder but a heterogeneous group of conditions with multiple causes. Although genetic differences are undoubtedly important, the marked rise in the prevalence of obesity is best explained by behavioural and environmental changes that have resulted from technological advances. In such circumstances, it is appropriate to consider pharmacological treatment as an *adjunct* to the other treatment modalities. Current drug treatment of obesity is directed at reducing energy/food intake either by an action on the gastrointestinal system or via an action through the central nervous system control of appetite and feeding<sup>6</sup>. Before prescribing a drug, a clinician must firstly assess whether the patient understands the purpose of the drug treatment (in combination with lifestyle change to improve health status) and how it works, and secondly, assess the likely outcome of treatment.

### **Types of drugs<sup>7</sup>**

There are currently three categories

- Drugs that decrease food intake
- Drugs that alter the metabolism of food
- Drugs that increase thermogenesis (Energy expenditure)

### **Sibutramine**

The following groups of patients may be suitable for sibutramine

Those whose appetites and eating habits are uncontrollable

- Frequent snackers

- Nocturnal eaters
- Those who need immediate weight loss for medical reasons
- Patients with low HDL cholesterol values
- Those with no contraindications to the use of sibutramine (specifically cardiac abnormalities or an elevated blood pressure, i.e, >140/90 mmHg on repeated measurements).

**Table 1: Effect of drug on food**

Drugs that decrease food intake	Drugs that alter the metabolism of food	Drugs that increase thermogenesis (Energy expenditure)
Phentermine (Duromine) Sibutramine (Reductil) Benzphetamine (Didrex) Diethylpropion (Tepanil ten tab) Mazindol (Mazanor) Phendimetrazine (Adipost, Bontril) Lorcaserin (Belviq) Rimonabant Phentermine –Topimarate (Qsymia)	Orlistat (Xenical) Beta-methyl-phenylethylamine (Fastin) Cetilistat	MC4 receptor antagonist  D4 Thermal Shock  Miglitol  Ephedrine and caffeine  Dinitrophenol

Sibutramine should be discontinued if the resting pulse rate is increased to more than 10 beats per minute and the blood pressure exceeds 145/95 mmHg. Sibutramine inhibits the re-uptake of noradrenalin and serotonin<sup>8</sup>. It is used in the adjunctive management of obesity in individuals with a body mass index (BMI) of 30 kg/m<sup>2</sup> or more (and no associated co morbidity) *or* in individuals with a BMI of 27 kg/m<sup>2</sup> or more in the presence of other risk factors such as type 2 diabetes or hyper cholesterolaemia. Sibutramine is not licensed for use longer than 1 year. On stopping it, there may be a reversal of weight loss.

**Indications:** Adjunct in obesity.

**Cautions:** Monitor blood pressure and pulse rate (every 2 weeks for first 3 months then monthly for 3 months then at least every 3 months) – discontinue if blood pressure or pulse rate raised at two consecutive visits; sleep apnoea syndrome (increased risk of hypertension); epilepsy; hepatic impairment (avoid if severe); renal impairment (avoid if severe); monitor for pulmonary hypertension; family history of motor or vocal tics.

**Duration of treatment:** Discontinue treatment if:

- weight loss after 3 months less than 5% of initial body weight
- weight loss stabilises at less than 5% of initial body weight
- Individuals regain 3 kg or more after previous weight loss.

In individuals with comorbid conditions, treatment should be continued only if weight loss is associated with other clinical benefits.

**Contraindications:** history of major eating disorders; psychiatric illness, Tourette's syndrome; history of coronary artery disease, congestive heart failure, tachycardia, peripheral arterial occlusive disease, arrhythmias, and of cerebrovascular disease; uncontrolled hypertension; hyperthyroidism; prostatic hypertrophy; pheochromocytoma; angle closure glaucoma; history of drug or alcohol abuse; pregnancy; breast-feeding.

**Side effects:** Most commonly constipation, anorexia, dry mouth, insomnia; also nausea, tachycardia, palpitations, hypertension, vasodilation, light-headedness, paraesthesia, headache, anxiety, sweating, taste disturbance; rarely, blurred vision.

**Dose:** Initially 10 mg daily in the morning, increased if weight loss less than 2 kg after 4 weeks to 15 mg daily; discontinue if weight loss less than 2 kg after 4 weeks at higher dose (see also Duration of treatment above); max period of treatment 1 year; CHILD, ADOLESCENT under 18 years, and ELDERLY over 65 years: not recommended.

#### **NICE guidance for sibutramine**

The National Institute for Clinical Excellence has recommended that sibutramine should be prescribed in accordance with the summary of product characteristics and under the following conditions:

- It should be prescribed only for individuals who have seriously attempted to lose weight by diet, exercise, and other behavioural modification
- Arrangements should exist for appropriate healthcare professionals to offer specific advice, support and counselling on diet, physical activities and behavioural strategies to those receiving sibutramine.

#### **Orlistat**

The following patients may be suitable for orlistat<sup>9</sup>:

- Those who have lost at least 2.5 kg in weight prior to consideration of drug treatment
- Patients requiring longer-term behavioural change
- Patients in whom a dietary assessment suggests high fat intake
- Patients with elevated LDL cholesterol values
- Patients with impaired glucose tolerance
- Patients who have repeatedly lost weight in the short-term and then rapidly regained it
- Those with an ability to adhere to a low fat diet for the longer term.

Orlistat, a pancreatic lipase inhibitor, reduces the absorption of dietary fat<sup>10</sup>. It is used in conjunction with a mildly hypocaloric diet in individuals with a body mass index (BMI) of 30 kg/m<sup>2</sup> or more *or* in individuals with a BMI of 28 kg/m<sup>2</sup> in the presence of other risk factors such as type 2 diabetes, hypertension, or hyper cholesterolaemia. Some of the weight loss in those taking orlistat probably results from individuals reducing their fat intake to avoid severe gastrointestinal effects including steatorrhea. Vitamin supplementation (especially of vitamin D) may be considered if there is concern about deficiency of fat-soluble vitamins. Orlistat is not licensed for use longer than 2 years because there is insufficient experience beyond this period. However, on stopping orlistat, there may be a gradual reversal of weight loss.

**Indications:** Adjunct in obesity.

**Cautions:** Diabetes mellitus may impair absorption of fat-soluble vitamins.

**If a multivitamin supplement is required, it should be taken at least 2 hours after orlistat dose or at bedtime.**

**Contraindications:** Chronic malabsorption syndrome; cholestasis; pregnancy and breast-feeding.

**Side effects:** Liquid oily stools, faecal urgency, flatulence, less frequently abdominal and rectal pain (gastrointestinal effects minimised by reduced fat diet); headache, menstrual irregularities; anxiety, fatigue; rarely hepatitis.

**Dose:** 120 mg taken immediately before, during, or up to 1 hour after each main meal (up to max 360 mg daily); max period of treatment 2 years; CHILD not recommended.

*Note:* If a meal is missed or contains no fat, the dose of orlistat should be omitted.

#### **NICE guidance for orlistat**

The National Institute for Clinical Excellence has recommended that orlistat should be prescribed under the following conditions<sup>11</sup>:

- Only for individuals who have lost at least 2.5 kg body weight by dietary control and Increased physical activity in the preceding month
- Only for individuals aged between 18 and 75 years
- Arrangements should exist for primary care staff (mostly practice nurses) supported by community dietitians to offer specific advice, support and counselling on diet, Physical activity, and behavioural strategies to those receiving orlistat
- Treatment should continue beyond 3 months only if weight loss is greater than 5% from start of treatment
- Treatment should continue beyond 6 months only if weight loss is greater than 10% from start

of treatment

- Treatment should not usually continue beyond 1 year and never beyond 2 years.

### **Duration of treatment**

The duration of treatment should not exceed the period indicated by the product licence.<sup>5,6</sup> The product licence for sibutramine advises that treatment should be continued beyond four weeks only if the patient has lost 2 kg or more. The prescription for both sibutramine and orlistat may be continued beyond three months<sup>12,13</sup>. If a patient has lost at least 5% of their body weight from the start of drug treatment. The drug should be stopped thereafter if weight regain occurs despite continuation of the treatment.

### **Phentermine-Topiramate (Qsymia)**

In July 2012, the FDA approved the drug combination phentermine<sup>14</sup> and topiramate<sup>15</sup>, sold as Qsymia (pronounced kyoo-sim-EE-uh) to treat obesity in adults. Qsymia combines two FDA-approved drugs:

- Phentermine, a medicine approved to suppress appetite.
- Topiramate, a medicine approved to control seizures. It may also be used to prevent migraine headaches. It is in an extended-release form in Qsymia.

Although phentermine when used as a single agent is approved for a few weeks, the combination has been studied for 2 years and found to be safe for use. Additionally, the doses used in Qsymia are much lower than the usual doses of phentermine and topiramate when prescribed separately. Qsymia is available in three doses: a starting dose, a recommended dose, and a higher dose. After 1 year of treatment with Qsymia, 62 percent of patients who were prescribed the recommended dose lost at least 5 percent of their weight. If after 12 weeks on the higher dose, you do not lose at least 5 percent of your body weight, it is unlikely that the drug will work for you.

### **Side effects**

Common side effects include tingling of hands and feet, dizziness, taste alterations (particularly with carbonated beverages), trouble sleeping, constipation, and dry mouth. Serious but rare side effects include allergic reactions (such as rash, hives, difficulty breathing), thoughts of suicide, memory problems, mood problems (such as anxiety, depression, panic attacks), and changes to your vision. Rare side effects associated with topiramate include kidney stones and acute glaucoma.

**Qsymia must not be used during pregnancy because it may cause harm to the baby.** People with an overactive thyroid gland, glaucoma, or who have recently taken certain antidepressant

drugs known as MAOIs should not use Qsymia, although the drug was studied in patients taking SSRI and other antidepressants without adverse events.

### **Phentermine (Duromine):**

Duromine contains phentermine as the active ingredient. Duromine is an ADEC category B3 drug. Phentermine helps weight loss by causing suppression of appetite in the brain.

### **Dose information**

The best time to take Duromine is first thing in the morning, as it can cause sleeplessness if taken at night. It's approved for short-term use (a few weeks) only. 15-30mg capsule or tablet, once a day, before breakfast. Weight reduction of 12.6 kg over a period of 36 weeks

Contraindications may increase the effects of alcohol. Avoid alcohol while taking this medication

Side effects can be serious

- Raising your blood pressure
- Causing heart palpitations
- Restlessness
- Dizziness
- Shortness of breath
- Chest pain

Both drugs remain restricted to three months use in the terms of their product licences. In the absence of new information about their longer-term efficacy and safety, phentermine and diethylpropion cannot be advocated as part of a structured management programme for overweight and obese patients.

### **Contraindications**

Centrally acting drugs are not recommended for patients who are concurrently taking other selective serotonin re-uptake inhibitors. It is therefore crucial to confirm that such drugs have not already been prescribed. It is probably also unwise to co-prescribe with tricyclic antidepressants, monamine oxidase inhibitors and lithium, all of which may potentiate the central effects of serotonin with adverse results. Combination therapy with anti-obesity drugs is contraindicated because of the absence of evidence for synergy between the two drugs, and lack of information about safety. There is limited information about the use of anti-obesity drugs in patients over the age of 75 years. For that age group, the accepted practice is to aim for weight maintenance rather than weight loss. Neither sibutramine nor orlistat is licensed for use in children.

Lorcaserin (Belviq)<sup>16</sup>

- Belviq (pronounced BEL-VEEK), works by affecting chemicals in your brain that help decrease your appetite and make you feel full, so you eat less.
- In studies done as part of the drug approval process, almost half (47 percent) of patients taking Belviq lost at least 5 percent of their initial body weight at 1 year. If you do not lose 5 percent of your weight within 12 weeks of being on the drug, it is unlikely that the medicine will work for you, and it should be stopped.

### **Side effects**

Common side effects of Belviq<sup>17</sup> include headaches, dizziness, feeling tired, nausea, dry mouth, cough, and constipation. A rare but serious side effect is serotonin syndrome (high fever, muscle rigidity, and confusion), which can occur if the drug is taken along with SSRI antidepressants or MAOI medications. Belviq, as with all weight-loss agents<sup>18,19</sup>, should not be taken if you are pregnant or planning to become pregnant.

### **Other Appetite Suppressants**

These drugs promote weight loss by increasing one or more brain chemicals that affect appetite. You may feel less hungry or feel full sooner when taking these drugs. They are FDA approved only for a short period of time (up to 12 weeks). Some doctors may prescribe them for longer periods of time.

Several appetite suppressants may be used to promote weight loss in adults<sup>20</sup>.

They include

- Phentermine (sold as Adipex-P, Oby-Cap, Suprenza, T-Diet, Zantryl)
- Benzphetamine (sold as Didrex)
- Diethylpropion (sold as Tenuate, Tenuate Dospan)
- Phendimetrazine (sold as Adipost, Bontril PDM, Bontril Slow Release, Melfiat)

### **Side effects**

Common side effects of appetite suppressants include dry mouth, difficulty sleeping, dizziness, headache, feeling nervous, feeling restless, upset stomach, and diarrhea or constipation. Severe side effects may include chest pain, fainting, fast heartbeat, shortness of breath, confusion, and swelling in your ankles or feet. People with heart disease, high blood pressure, an overactive thyroid gland, or glaucoma should not use these drugs. These medications are controlled substances because of their potential for abuse.

### **Saxenda**

The U.S. Food and Drug Administration recently approved Saxenda (liraglutide [rDNA origin])

injection) as a treatment option for chronic weight management in addition to a reduced-calorie diet and physical activity.

**How it works:** Saxenda is a higher dose of the type 2 diabetes drug Victoza. It mimics an intestinal hormone that tells the brain your stomach is full. It was approved for long-term use.

**Side effects:** Nausea, vomiting, diarrhoea, constipation, low blood pressure, and increased appetite. Serious side effects can include raised heart rate, pancreatitis, gallbladder disease, kidney problems, and suicidal thoughts.

**What else you should know:** If you don't lose 4% of your weight after 16 weeks of taking Saxenda, you should stop taking it, because it's unlikely to work for you, the FDA says. Only two anti-obesity drugs (AODs) are frequently prescribed in paediatric obesity, orlistat and metformin.

### **Off label drugs for obesity**

Some medicines that have been approved to treat other health problems may also be used for weight loss. Using a medicine for a different purpose from that for which it was approved, in a different population, or for a longer period of time is called using it in an "off-label" way. Other prescription drugs some doctors prescribe off label to promote weight loss include

- Bupropion<sup>21,22</sup>, a drug used to treat depression
- Metformin, a drug used to treat type 2 diabetes

The side effects of these medications and the population for whom they might be appropriate vary. Drugs prescribed off label also have not met the rigorous standards of FDA approval as an obesity treatment.

### **Future Approval Drugs**

Several new drugs and drug combinations are currently being studied in animals as well as in clinical trials in humans. Research is ongoing to identify more safe and effective medications to help patients with obesity lose weight and maintain a healthy weight for a long time.

Future drugs may use new strategies, such as these:

- Combining drugs that affect appetite and those that affect addiction (or craving)
- Stimulating gut hormones that reduce appetite
- Shrinking the blood vessels that feed fat cells in the body, thereby preventing them from growing
- Targeting genes that affect body weight
- using bacteria in the gut to control weight

### **Drugs not suitable for the management of overweight and obesity**

There is no published evidence to suggest that bulk forming agents (eg methyl cellulose) have any beneficial long-term action for weight reduction:

- Diuretics, human chorionic gonadotrophin (HCG), amphetamine, dexamphetamine and thyroxine **are not** treatments for obesity and **should not** be used to achieve weight loss.
- Under no circumstance should thyroxine be prescribed for obesity in the absence of biochemically proven hypothyroidism.
- Metformin and acarbose may be useful in the management of the obese non-insulindependent

### **Herbal drugs<sup>23,24</sup>**

#### **Trim Formula**

Trim formula is a combination of herbs and is a natural way for weight loss. Constituents of Trim formula of "Thinner you" pack of planet ayurveda are:

**Vrikshamal:** The vrikshamal is a herb that is a constituent of trim formula of planet ayurveda weight loss natural product. Vrikshamal extract is used in this herbal product of planet ayurveda which helps in reducing the conversion of fat and also reduces the accumulation of fat in the body. Thus naturally helps in weight loss.

**Mustak:** The extract of mustak is an ingredient of trim formula of planet ayurveda weight loss herbal product. Mustak is responsible for improving digestion of the body and thus helps in weight loss of the body.

**Triphala:** The triphala is an ingredient of the trim formula of planet ayurveda weight loss plan. This is natural product and helps in improving digestion, detoxification and releases waste from the body. Therefore it naturally helps in weight loss.

#### **Stholyantak Churna:**

Stholyantak Churna is a herbal remedy of planet ayurveda and is part of weight loss "thinner you" pack. Constituents of Stholyantak Churna are:

**Agnimanth:** The agnimanth is a herb which is a constituent of Stholyantak Churna, which is a herbal remedy of planet ayurveda for weight loss. This is responsible for stopping fat to get deposited on the body. This is more effective stopping fat to get deposited in lower body. Thus helps in weight loss.

**Arjuna:** The arjuna is a herb which is a constituent of Stholyantak Churna, which is a herbal product of planet ayurveda for weight loss. Arjuna is responsible for dissolving fat in the arteries and also strengthens the heart and improves blood circulation. Fat dissolving action makes arjuna important ingredient of weight loss plan.

**Triphala:** The triphala is a herb which is a constituent of Stholyantak Churna, which is a herbal product of planet ayurveda for weight loss. Triphala improves digestion and detoxifies the body by releasing waste out of the body. This helps in weight loss.

**Ashok:** Ashok is part of natural remedy of planet ayurveda weight loss plan because it is responsible for regulation metabolism of fat and helps in weight loss of the body.

**Kalmegh:** Kalmegh is part of natural remedy called Stholyantak Churna for weight loss. This herb acts as laxative and thus improves digestion of the body. Therefore helps in weight loss of the body.

**Babool:** Babool is an ingredient of Stholyantak Churna of planet ayurveda for weight loss as it is responsible for harmonizing vatta – pitta doshas of the body and regulates metabolic rate of the body. Thus helps in weight loss.

**Chitrak:**Chitrak is an ingredient of Stholyantak Churna of planet ayurveda for weight loss as it is responsible for solving problems induced by kapha nad vatta and improves digestion of the body. Thus helps in weight loss.

**Mustak:** Mustak is an ingredient of Stholyantak Churna of planet ayurveda for weight loss as it is responsible for improving digestion power of the body and therefore helps in weight loss.

**Vidang:** Vidang is a herb that is used Stholyantak Churna of planet ayurveda for weight loss as it is responsible for reducing flatulence and constipation. Thus helps in weight loss of the body.

**Dalchini:** Dalchini is an ingredient of Stholyantak Churna of planet ayurveda for weight loss as it is responsible boosting the body's metabolic rate and thus helps in weight loss. It further aids on weight loss by reducing the bad cholesterol level and reduces sugar level by provoking insulin. Thus it plays a major role in weight loss of the body.

**Neem:** Neem is a medium height tree. Its bark is used in Stholyantak Churna of planet ayurveda for weight loss as neem helps in improving digestion and is a detoxifier in nature. Thus naturally helps in weight loss.

**Brahmi:** Brahmi is a herb that is a constituent of Stholyantak Churna of planet ayurveda for weight loss because brahmi helps in improving digestion of the body. Thus helps in reducing weight loss of the body.

**Shigru:** Shigru is an ingredient of Stholyantak Churna of planet ayurveda for weight loss. Shlgru helps in weight loss as it has fat dissolving property.

**Jamun:** Jamun is present in Stholyantak Churna of planet ayurveda for weight loss. Jamun has the property of improving digestion and reduces flatulence in the body. Therefore plays a vital role in weight loss.

### **Garcinia**

Garcinia is a herb that is part of "thinner you" pack of planet ayurveda for weight loss. Garcinia blocks fat absorption and also acts as a "filler" so that the person eats less. Thus has the effect of weight loss of the body.

### **Guggul**

Guggul is a herb that is part of "thinner you" pack of Planet Ayurveda for weight loss. Guggul is responsible for inhibiting formation of new fat cells and increases lipid metabolism. Thus "Thinner you" pack of planet ayurveda is responsible for weight loss in a very effective way without any side effects. All the ingredients are important and play a vital role in weight loss of the body

### **Homeopathy Drugs**

#### **Antimonium crudum**

- For young people and children there are some common symptoms of *Antimonium crudum* including tendency to grow fat, too much irritability and nervousness together with a heavily coated white tongue, inclined to grow fat, for the extremes of life. On the other hand old people with morning diarrhea suddenly become constipated or alternate constipation and diarrhea. All the conditions worsen by heat and cold bathing.

#### **Phytollaca**

- It is a chief remedy to treat obesity. *Phytollaca* helps to reduce fat and thus reduce weight of the body. It also decreases fat and false growths. Burning in throat as from coal fire and unable to swallow hot liquids is a common symptoms of *Phytollaca*.

#### **Fucus Vesiculosus**

- Thyroid enlargement in obese people and obstinate constipation are the main symptom of *Fucus Vesiculosus*. It is used for non-toxic goiter and obesity problem.

#### **Sepia**

- Sepia is actually used to treat female obesity. Obesity in menopausal females with perspirations and hot flushes, yellow complexion and bearing down sensations and obesity in females with weakness are the suitable symptoms to use Sepia.

#### **Pulsatilla**

- Sometimes *Pulsatilla* helps to reduce obesity of female. When we get the changeable and contradictory symptoms then this remedy gives proper result. Females who are sad, cry easily and weeps when talking with other are the patient of *Pulsatilla*. They also feels chilliness.

#### **Capsicum**

- Sometimes physician likes to use this remedy to treat obesity of young people. Capsicum helps those people who are weak, indolent and have no vital heat or no reactive force.

### **Phytolin**

- When the patient feels the complexity in sitting, walking, palpitation and nausea; then *Phytolin* acts as a great fat reducer. Its mother tinctures are more effective than the potencies.

### **Kali Carbonicum**

- The old persons who have a backache, sweat and body weakness are a patient of *Kali Carbonicum*. Person may have dark hair and lax fibre. It is actually a remedy of old peoples.

### **Graphites**

- This remedy mostly fits for the female. Fat women with delayed menstruation must get benefits from *Graphites*. The patients of this homeopathic remedy are fat, stout and have tendency to skin affections. This remedy gives the best result for those who have lost desire for sexual intercourse.

### **Unani Treatment<sup>25</sup>**

- Safoof Mohazil 5gm with 20 ml Arq Zeera twice a day
- Take 5ml Shahad (Honey) with one cup of water and drink at morning in empty stomach
- Nembu ras(Lemon juice) is quite effective for obesity patients<sup>26</sup>. 5-10 ml of Nembu ras is mixed with one glass of water and should be taken on empty stomach in the morning. The mix is very useful for melting of adipose tissue from the body as well as weight loss. However, it is recommended to take the above mix once a day, otherwise, the person may experience loose motion or some digestive problems.
- Jawarish Kamoni Akber 5gm with Sikanjabeen Lemoni 10ml twice a day.
- One gram of Luke -e-Maghsool may be taken with water in the morning for getting positive impacts for obesity.
- Two pills of Habbe Mohazil and Two pills of Qurs Tinkar twice a day with 5gm Ithrifal Sanai at bed time.

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