



Review Article

ISSN : 0975-7384  
CODEN(USA) : JCPRC5

## Safe and unsafe drugs during pregnancy

Tshering Pem, Vivek Gupta\* and Gopal L. Khatik

*School of Pharmaceutical Sciences, Lovely Professional University, Punjab 144411*

---

### ABSTRACT

*During pregnancy various drugs are associated with contraindication, hence their application is limited and dangerous to mother along with fetus. Even though during pregnancy medication is less preferred but in certain cases cannot be escaped to treat the ailments in mother. So herein we discussed the medication that can be used safely during pregnancy along with the drugs which are unsafe or highly contraindicated for both mother and the fetus. The problems or complications may be attributed by possible drug interactions during the pregnancy. We tried to cover all related drugs which are safe or unsafe with their chemical structures and major associated problems. The purpose of this review is to create a list of safe medications which can be taken during pregnancy with unsafe and highly contraindicated drugs as a quick reference for health care professionals.*

**Key words:** Pregnancy, safe drugs, unsafe drugs, contraindicated drugs

---

### INTRODUCTION

Pregnancy [1] is a period in which a fetus is developed into a woman's womb which can involve one or more than one foetus (twins). It is also known as gestation period which last up to 40 weeks. The early symptoms of pregnancy are nausea and vomiting, mood swing, missed periods, tender breast. It can be confirmed by the pregnancy test by detecting human chorionic gonadotropin (hCG), in the blood or urine [2]. It has to go through up to three trimesters, first trimester include from the week 1-12, in which the conceiving takes place. In this period there is a high risk of miscarriage. Second trimester lasts from week 13-28. In this period foetus movement can be felt. Third trimester lasts from week 29-40, in which the parental care is very essential [3]. During pregnancy period the mother has to be conscious about her eating habits and variety of medications which she is undergoing, as it can be very risky for the growing fetus inside the womb [4].

Some common food that should be avoided during pregnancy are raw meat, seafood, undercooked egg, alcohol, canned food, caffeine, street food as these are unhygienic and unhealthy for the developing fetus inside the womb [5]. Recent report by UNICEF shows that the maternal mortality is very high and causing death of 830 women every day around globe due to pregnancy and complication of child birth. It is expected by nearly 303,000 women have died by the end of 2015, and among them alone 99% maternal deaths occurs in developing countries [6, 7]. Death during pregnancy is associated with various factors such as severe bleeding after child birth, infections, high blood pressure, complications from delivery and drug contraindications.

Pregnancy is a very crucial part of life for the both mother and baby so it's very important for the pregnant mothers to follow up of do's and don'ts during the gestation period. The most important thing is the medication she is undergoing as the drugs containing the mixture of chemicals when interact together may cause the teratogenic effect

to the baby. So it is very important for the health care professionals and pregnant woman to know which drugs can be taken and which should be avoided during this period therefore this review gives insight of the drugs which are safe and unsafe during pregnancy to increase the awareness [8,9].

## 2. DRUG INTERACTION

Drug interaction is defined as an interaction between a drug and other substances (food/chemical/drug) which prohibits the function of the drug. It can either enhance or inhibits the effectiveness or the side effects of the drug, also it can create an adverse reactions or new side effect of the drugs. Those who are taking multiple medications for the long period of times are at risk, and the patient with renal and hepatic impairment are also at the risk for drug interaction. Similarly pregnant women are also at high danger of drug interactions [10].

Drug interaction can be either synergistic i.e. which increase the drugs effect or antagonistic which decrease the drugs effect. It can be drug-drug interaction or drug-food interaction. This interaction may be result of various processes like the alteration of pharmacokinetic and pharmacodynamic properties simultaneously. However during the first trimester of pregnancy all drugs should be avoided but due to certain cases of sickness, administration of drug is unavoidable. The transfer of drug occurs through the placenta during pregnancy through which the essentials nutrients required for the growth of fetus also pass through. It is also one of the barriers known as placental blood barrier. Fetus is more sensitive to drugs than mother since fetal hepatic enzymes function is less and rapidly growing fetal tissues are more susceptible to the effect. During gravidity period there is increase in plasma proteins which binds drugs poorly, resulting in more amount of free drug.

Drugs are teratogenic only at specific times during embryogenesis. Teratogenicity is a condition when any drug of chemical substance which produce deviations or abnormalities in the development of embryo. Therefore to avoid such problems it is very important to know which drugs should be prescribed during pregnancy. Food and drug administration of America enforce the rule for the categorization of the drug that is contraindicated during pregnancy so a classification has been carried out as following [5].

Category A: Controlled studies show no risk or find no evidence of harm.

Category B: Animal studies show no risk, but there are no controlled studies on pregnant women.

Category C: Animal studies have shown risk to the fetus, there are no controlled studies in women, or studies in women and animals are not available.

Category X: Studies in animals or human beings have demonstrated fetal abnormalities, or there is evidence of fetal risk. The drug is contraindicated in women who are or may become pregnant.

Category N: FDA has not yet specified the drug in this category.

## 3. DRUGS DURING PREGNANCY

Pregnancy can affect the effectiveness of medication. During pregnancy the blood volume increases and also the kidney and heart workload increases. Medication during pregnancy is important for reason like diabetes, seizures, depression, anxiety, and other medical conditions. Also some in common discomforts such as heartburn, morning sickness or headaches. During pregnancy the transfer of drugs occur through placenta via simple diffusion, facilitated diffusion, activated transport and pinocytosis and depends upon following factors:

1. Physicochemical nature of drug: Drugs having MW less than 400 cross the placental barrier faster and very easily.
2. Role of placental tissue: During pregnancy placental thickness decreases while surface area increases. However the permeability is not affected.
3. Placental blood barrier: The rate of passage of drugs across the placenta depends upon the maternal and fetal placental flow [11, 12].

### 3.1 Safe drugs

There are various drugs which are safer and can be used for the treatment of ailment during pregnancy, such drug discussed below and showed in table 1.

#### 3.1.1 Analgesic drugs

Analgesic drugs are used to combat the pain. Paracetamol, pethidine, Indomethacin, allopurinol are frequently used analgesics which are considered safe during pregnancy (Figure 1).

**Paracetamol (Acetaminophen) (1):** Acetaminophen has been considered as a safer drug for pregnant women to reduce fever and alleviate pain than other NSAIDs drugs such as aspirin, ibuprofen. It was found that there is no fetal abnormality which was observed in the studies performed in rats, rabbits, dogs at up to 10 times the human dose. But pregnant woman who use pain reliever maybe at higher risk for asthma, behaviour problems and attention deficit disorder according to preliminary research [11,13].

**Pethidine (Meperidine) (2):** This drug crosses the placental barrier and causes delayed respiration in new born which can be reversed by using naloxone. It is a safe narcotic analgesic which is given at the first stage of labor (6-8 hours before delivery) [11].

**Indomethacin (3):** It is the best agent during pregnancy as it doesn't have any fetal and maternal effects. It is use to treat chronic arthritis and connective tissue disorder [11, 13].

**Allorpurinol (4):** It doesn't have any effect on fetus. It reduces uric acid in the body and is used to treat gout and kidney stones [5, 11, 13].

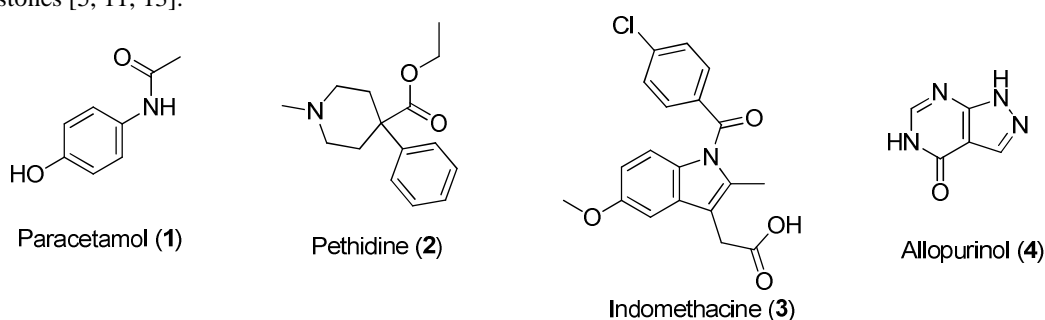


Figure 1: Analgesic drugs safe in pregnancy.

### 3.1.2 Gastro-intestinal agents

GI drugs frequently used during pregnancy to avoid digestion related complications as well as motion sickness. There are few GI drugs which are safe in use during pregnancy shown in figure 2.

**Laxative:** These agents are used in patient suffering from constipation. So far no teratogenic or adverse fetal effects are reported of these agents. But its frequent use must be avoided during pregnancy as it interferes with the absorption of fat soluble vitamin [11, 14].

**Anti-emetics:** These are the agent which inhibits vomiting. These agents are proven safe for use by pregnant woman in the treatment of morning sickness which is the most common problem during the first trimester. Drugs like doxylamine (5) and pyridoxine are given in combination for morning sickness [5, 11, 13].

**Anti-diarrheal:** These agents are used to treat diarrhoea. Kaolin along with pectin is medicinally used as an adsorbent, the chances of abnormalities in the fetus is not there. Dicyclomine (6) is the safest drug during pregnancy as an anti-spasmodic and has no teratogenic effect [14, 15].

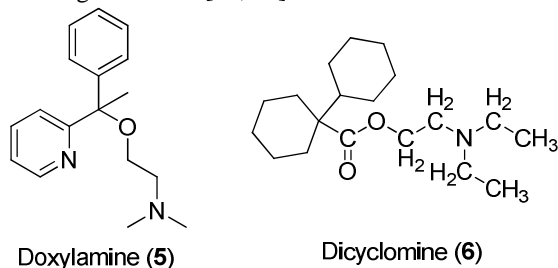


Figure 2: GIT drugs safe in pregnancy

### 3.1.3 Antiasthmatic Agents

During pregnancy only few antiasthmatic drugs are safe which includes ephedrine, aminophylline and terbutaline

(Figure 3).

**Ephedrine (7):** It is a sympathomimetic agent which causes the constriction of the blood vessels and widening of the bronchial passages and use to relieve asthma and hay fever. It is a safe sympathomimetic agent with rapid onset of action [11].

**Aminophylline (8):** It has also no adverse and teratogenic effect and it decreases the respiratory distress in premature infants. It is indicated for bronchial asthma and is non toxic

**Terbutaline (9):** It is used to treat the chronic bronchial asthma. It is also use to inhibit uterine activity in second and third trimester and to manage premature labor and does not show any adverse effect [16].

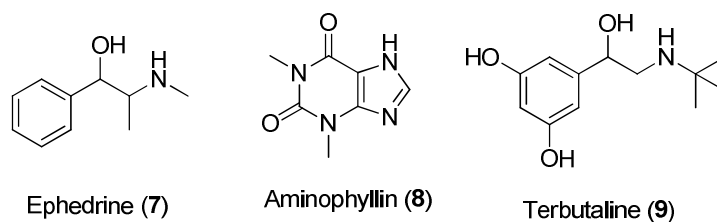


Figure 3: Anti-asthmatic drugs safe in pregnancy

### 3.1.4 Antihypertensive agents

The safer antihypertensive drugs such as methyldopa, hydralazine and lidocaine as discussed below (Figure 4).

**Methyldopa (10):** It is an anti hypertensive drugs of first choice in hypertension during pregnancy. It crosses the placenta but does not affect the uterine blood flow and fetus. It decreases the fetal wastage, increases the birth weight and length of gestation [11, 14].

**Hydralazine (11):** It is present in foxglove plant. It is used as a cardiac stimulant used to treat congestive heart failure. It has been found no adverse effect on the fetus so considered as a safe drug during pregnancy.

**Lidocaine (12):** It also used in cardiac arrhythmia and it does not have any adverse effect on the fetus.

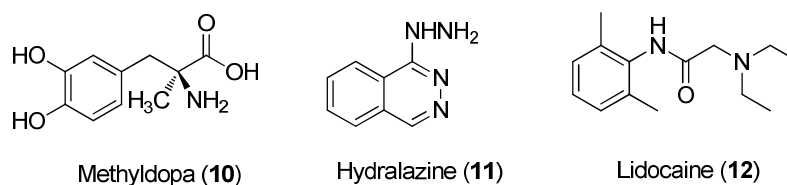


Figure 4: Antihypertensive drugs safe in pregnancy

### 3.1.5 Antitubercular Agent

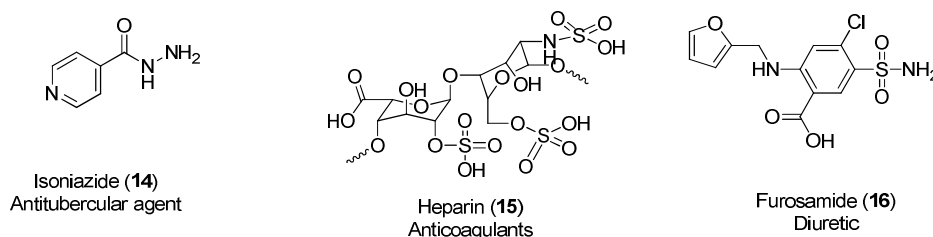
For the treatment of tuberculosis during pregnancy isoniazid is considered as safe (Figure 5).

**Isoniazid (13):** This drug is used to treat tuberculosis infection. It does not have any adverse affect on the fetus, and with combination of vitamin-B6, avoids fetal neural damage. Other drugs like ethambutol, rifampicin is also safe to use [8, 11].

### 3.1.6 Anticoagulants

Heparin is known as anticoagulant and used as a safe drug during pregnancy to treat thrombotic disorders (Figure 5).

**Heparin (14):** It is an anticoagulant which prevents the formation of blood clots. It is used to treat blood clots in arteries and veins. It is a drug of choice during pregnancy as it doesn't show any adverse effect on the fetus [11].



**Figure 5: Antitubercular and anticoagulant drugs safe in pregnancy**

### 3.1.7 Diuretics

Diuretic are intended to use for increase in urination and commonly used to reduce the blood pressure in the hypertension condition (Figure 5).

**Furosemide (16):** It is a strong diuretic that is used in the treatment of edema. It does not show any toxic effects but can cause hyponatremia and hypokalemia in neonates. It can be used in other serious maternal illness like refractory hypertension when other drugs become unresponsive.

### 3.1.8 Miscellaneous

**Tetanus injection:** Injectable preparation is administered during second and third trimester of pregnancy to prevent tetanus.

**Pobencid:** It is administered along with the penicillin and it is safe to be used during pregnancy.

**Calcium and Vitamin-D:** These can be safely given in the deficiency states and in accurate doses.

**Table 1: A list of safe drug during pregnancy [17]**

S. No.	Safe Drugs (in pregnancy)	Function	Side effects(in fetus)
1.	Analgesic drugs (paracetamol, pethidine, Indomethacin, Allopurinol)	Analgesic, antipyretic, chronic arthritis and connective tissue disorder, gout and kidney stones	No fetal abnormalities, Administered at the first stage of labor (6-8hrs before delivery)
2.	Gastro-intestinal agent (laxative, antiemetic, anti-diarrheal)	Benefits in constipation, Inhibit action of emetics, diarrhea	No teratogenic or adverse effect, Treatment of morning sickness during first trimester, Anti spasmodic during pregnancy
3.	Antiasthmatic agent (Ephedrine, Aminophylline, Terbutaline)	Asthma, hay fever, bronchial asthma, Chronic asthma	No adverse effect and teratogenic effect
4.	Antihypertensive agent (Methyldopa, Hydralazine, Lidocaine)	Hypertension, Congestive heart failure, Cardiac arrhythmia	Decrease fetal wastage, Increase birth weight and length of gestation, No adverse effect
5.	Anti tubercular agent (Isoniazid)	Tuberculosis infection treatment	No adverse effect
6.	Anti-coagulants (heparin)	Anti coagulant action	Avoids feta neural damage
7.	Diuretics (Furosemide)	Edema, maternal illness	No adverse effect
8.	Miscellaneous drugs (tetanus, Pobencid, calcium and vitamin D)	Antibiotics, Regulate the balance of salt	No adverse effect, Administered in second or third trimester

### 3.2 Drugs Affiliated With Some Risk.

Some of the drugs which are associated with risk during pregnancy and referred as unsafe drug as discussed below and below and showed in table 2.

#### 3.2.1 Anti asthmatic agent

**Chromolyn sodium (17):** It is used for the prophylaxis in bronchial asthma. It slows down the fetal growth if taken in large doses but does not have teratogenic effect [8, 11, 14].

**Corticosteroids (18):** Theses drug should be avoided during pregnancy as it has adverse effect like malformations and retardation of fetal growth.

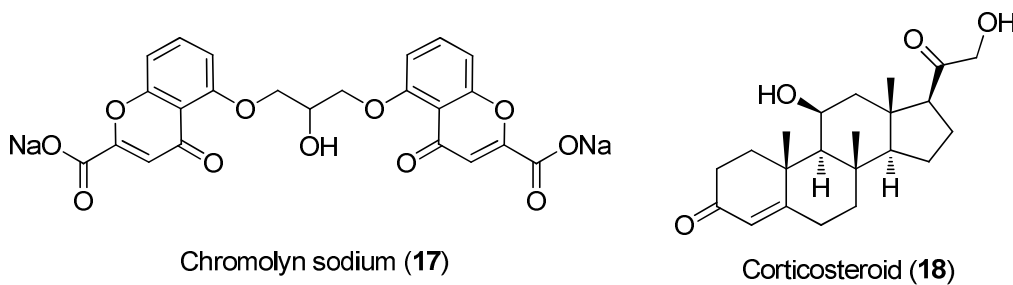


Figure 6: Corticosteroid safe in pregnancy

### 3.2.2 Gastrointestinal Agent

**Antacid:** It is a substance which prevents and neutralizes stomach acidity and also relieves the heartburn. These are OTC drugs which are taken orally to relieve the acidity and heartburn. Antacids like aluminium hydroxide, sodium bicarbonate (Figure 7), magnesium trisilicate and calcium carbonate adversely affect the fetus so, they should be avoided [11,14].

**Anti emetics:** It is a substance that is effective against nausea and vomiting. It is mostly used in motion sickness. Some drugs like cyclizine (Figure 7), hydroxyzine, trimethobenzamide and prochlorperazine in pregnancy did not shown good results.

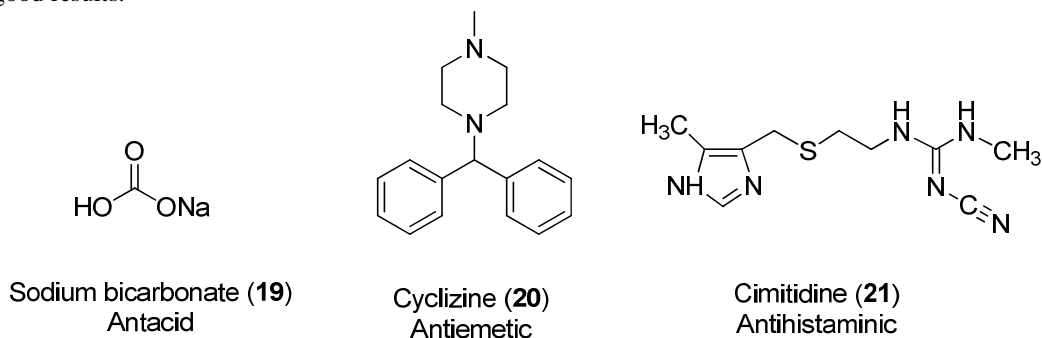


Figure 7. Unsafe gastrointestinal drugs during pregnancy

**H2 Blockers:** H2 receptor antagonist is the class of drugs that blocks the action of histamine on the parietal cell in the stomach which decreases the production of acid. Drugs like cimetidine (Figure 7) and ranitidine are given during pregnancy but their frequent use should be prohibited [11].

### 3.2.3 Antimicrobial

**Chloramphenicol (22):** It is an antibiotic which is useful in treatment of serious infections such as typhoid fever. It does not have any adverse affect but may cause 'grey baby syndrome' and reversible bone marrow when it is given just before the delivery (Figure 8).

**Nitrofurantoin (23):** It is usually effective against the *E. Coli* infection such as urinary tract infection. Due to its haemolytic effect on the fetus it should be avoided (Figure 8).

**Sulphonamides (24):** This antibiotic is used against urinary tract infection. It should be avoided during third trimester, as they may be harmful for the fetus (Figure 8).

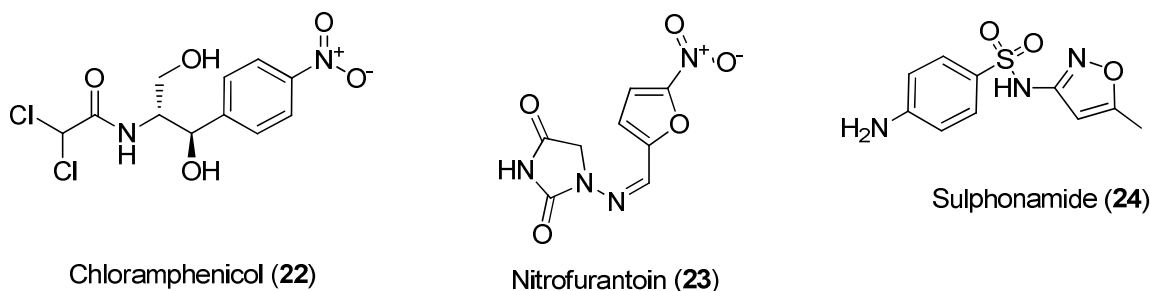
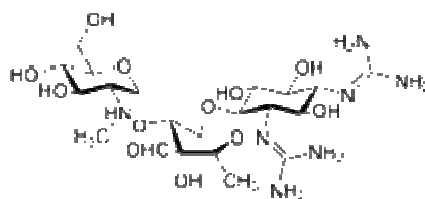


Figure 8. Unsafe antimicrobial drugs during pregnancy

### 3.2.4 Antitubercular Agent

**Streptomycin (25)**: It is one form of oldest anti tubercular drug (Figure 9). It causes a minor effect to the fetus after crossing the placenta. It is mainly given to the patient resistant to rifampicin.



Streptomycin (25)

Figure 9. Unsafe Antitubercular drugs during pregnancy

### 3.2.5 Antihypertensive Agents

**Diazoxide (26)**: It is an anti hypertensive agent and used as a vasodilator in an acute hypertension or malignant hypertension. It can cause the damage to the fetus by producing the sudden decrease in the blood pressure (Figure 10).

**Captopril (27)**: It is the first ACE inhibitor that was developed and used for the treatment of hypertension and congestive heart failure. It is given in the case when the other drug becomes ineffective (Figure 10).

### 3.2.6 Diuretics

**Ethacrynic Acid (28)**: This drug has been assigned in the pregnancy category B. it is not recommended for the treatment of edema or hypertension during pregnancy as a potent diuretic agent because it can induce maternal hypovolemia and decreased placental perfusion pressure. It is only an alternative agent to furosemide and the dose depends from patient to patient (Figure 10).

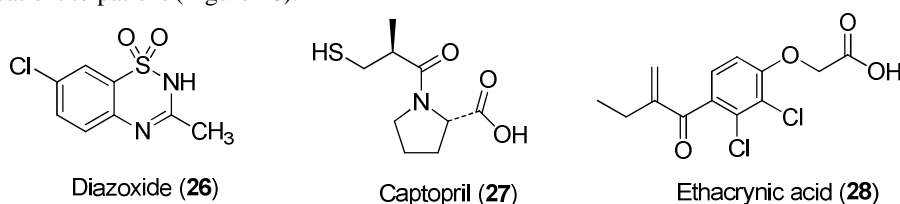


Figure 10. Unsafe antihypertensive and diuretic drugs during pregnancy

### 3.2.7 Cardiac Drug

**Calcium Antagonist**: They are also known as calcium channel blockers which are used as anti- hypertensive drug. Drugs like verapamil (29) (Figure 11), nifedipine, diltiazem can be administered during pregnancy but checking of the fetus should be necessary.

### 3.2.8 Antimalarial

**Primaquine (30)**: It is an anti malarial agent use to treat malaria and pneumonia. This drug should be avoided during pregnancy as it cross the placenta and cause the haemolytic anaemia in neonates and also show the

pharmacological adverse effects (Figure 11).

### 3.2.9 Analgesics

**Salicylic acid (31) and Salicylates:** It is the drug that is used to relieve the pain. There are different classes of analgesic like NSAIDS, COX-2 inhibitors etc. Salicylates are class of NSAIDS where the different types of drugs are available (Figure 11). They are usually used in the treatment of arthritis and various pains. This drug should be completely avoided during the pregnancy as it has the potential to cause adverse effects to the fetus [8]. Examples of adverse effects are neonatal platelet dysfunction, decrease neonatal factor XII, respiratory syndrome and neonatal haemorrhages and decreased birth weight [11, 14].

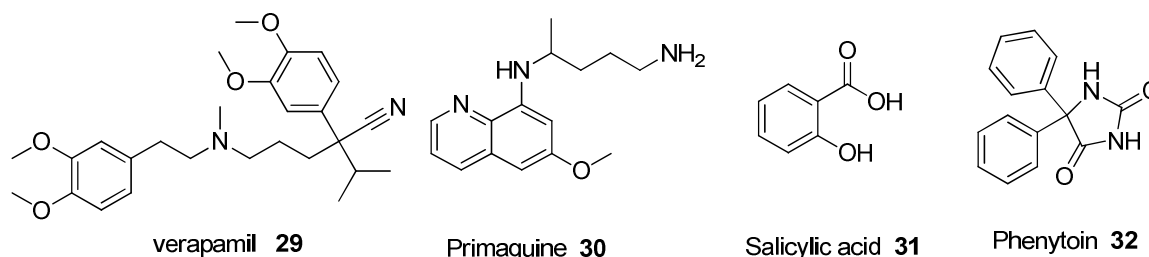


Figure 11. Various unsafe drugs during pregnancy

### 3.2.10 Miscellaneous

**Anticonvulsants:** These are the drug which prevents or reduces the seizures in various types of epilepsy. The pregnant women who is taking anti epileptic drug, should not take more than one antiepileptic drug as it can cause malformation and fetal abnormality such as congenital heart disease, neural tube defects, cleft lips and urogenital. Drugs like phenytoin (32) (Figure 11), phenobarbitone and sodium valporate are the ones which can likely to cause the malformations. So, these drugs should be avoided [11, 14].

Table 2: A list of unsafe drug during pregnancy

S. No.	Unsafe Drugs (in pregnancy)	Function	Side effects (in fetus)
1.	Antiasthmatic agent (Chromolyn sodium, Corticosteroids)	Prophylaxis in bronchial asthma	Slows down fetal growth but no teratogenic effect, Malformation and retardation
2.	Gastrointestinal agent (Antacid-aluminium hydroxide, sodium bicarbonate, anti-emetics, cyclizine, hydroxyzine, prochlorperazine, H2 blockers, cimitidine, ranitidine)	Relieve from stomach acidity, Nausea and vomiting, Acid reducer.	Adverse effect, Not good result shown, Frequent use should be prohibited
3.	Anti-microbial (chlorphenicol, nitrofurantoin, sulphonamide)	Relieve from Typhoid, UTI	Grey baby syndrome, bone marrow depression and haemolysis
4.	Antitubercular agent(Streptomycin)	Used in tuberculosis	Minor effect after crossing from placenta.
5.	Antihypertensive drugs (Diazoxide, Captopril)	Vasodilator, used in hypertension	Damage to the fetus by reducing BP.
6.	Diuretics (Ethacrynic acid)	Edema and hypertension.	Decrease placental perfusion.
7.	Cardiac drugs(Calcium antagonist-Verapamil, nifedipine)	Anti hypertensive drug.	Safe but checking of fetus should be necessary
8.	Anti-malarial (Primaquine)	Malaria and pneumonia	Haemolytic anaemia in neonates and adverse effect.
9.	Analgesic (Salicylates)	Pain reliever	Neonatal platelet dysfunction, haemorrhage and decrease birth weight
10.	Miscellaneous (Phenytoin, Phenobarbitone, sodium valporate)	Reduce seizures in epilepsy	Malformations

### 3.3 Drugs contraindicated in pregnancy

Some of the drugs which are contraindicated during pregnancy as discussed below and showed in table 3.

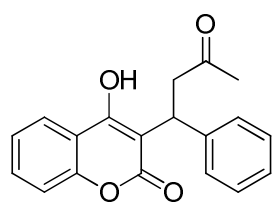
**3.3.1 Anticoagulants:** As discussed above in the safe drugs under the anti-coagulant agent, it's a substance which prevents the formation of blood clots. Under this class only heparin is the safe drugs that can be taken during pregnancy. Drugs like warfarin (33) (Figure 12), and coumarin are not preferred during pregnancy as they can cause



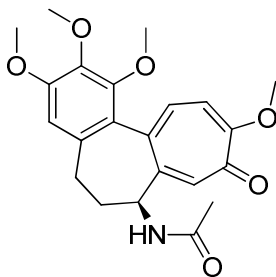
congenital malformation and fetus can be mentally retarded. They can also cause eye abnormalities and haemorrhages [9, 11, 14].

### 3.3.2 Analgesics

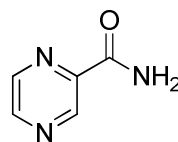
**Colchicine (34):** It has been found out that colchicines during pregnancy is not safe as it can cross the placenta and found out that it increase the risk of miscarriage and teratogenic effect. So, it should be strictly prohibited during pregnancy (Figure 12).



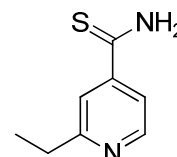
Warfarin **33**



Colchicine **34**



Pyrizinamide **35**



Ethinoamide **36**

Figure 12. Various contraindicated drugs during pregnancy

### 3.3.3 Antitubercular agent

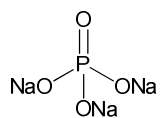
**Pyrizinamide (35):** This drug is used to treat tuberculosis but it is not prescribed during pregnancy as it is excreted in the milk and also seen to have an adverse affect on the liver (Figure 12).

**Ethinoamide (36):** This drug crosses the placenta and due to its toxicity, it should not used in pregnancy (Figure 12).

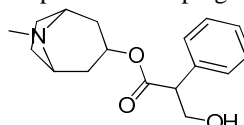
### 3.3.4 Gastro-intestinal agent

**Laxative:** Laxatives are agent which is used in the constipation. Laxative like castor oil, dibasic sodium phosphate (37) (Figure 13), magnesium salts, should be avoided because of the possibility of stimulating the premature uterine contraction. It can also cross the placenta and there is a chance of malformation.

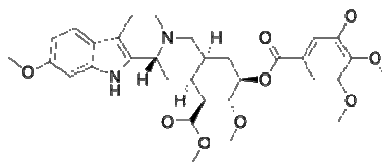
**Atropine (38):** It is a naturally occurring belladonna alkaloid. It crosses the placenta and cause tachycardia, urinary retention and hyperthermia in neonates. Hence it should not be prescribed in pregnancy (Figure 13).



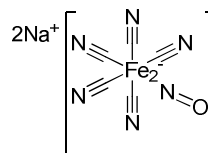
Dibasic sodium phosphate **37**



Atropine **38**



Reserpine **39**



Sodium nitroprusside **40**

Figure 13. Various contraindicated drugs during pregnancy

### 3.3.5 Antihypertensive agent

**Reserpine (39):** It is used in the treatment of chronic hypertension. It has shown adverse effects during pregnancy. It is responsible for producing watery discharges and may even cause death of neonates (Figure 13).

**Nitroprusside (40):** It can cause acute hypotension in fetus and may lead to death. So it should be avoided during pregnancy (Figure 13).

**3.3.6 Diuretics**

**Chlorothiazide (41):** It causes decreased birth weight, salt and water depletion in neonates along with hypoglycaemia, hyperbilirubinemia. Infants also show bone marrow depression and thrombocytopenia (Figure 14).

**3.3.7 Anti-microbial**

**Tetracycline (42):** They don't cause teratogenic effect but causes the calcification of bones or the deposition of calcium in infants. If given during after 25<sup>th</sup> week of gestation it causes the staining of deciduous and tooth malformation [11, 13].

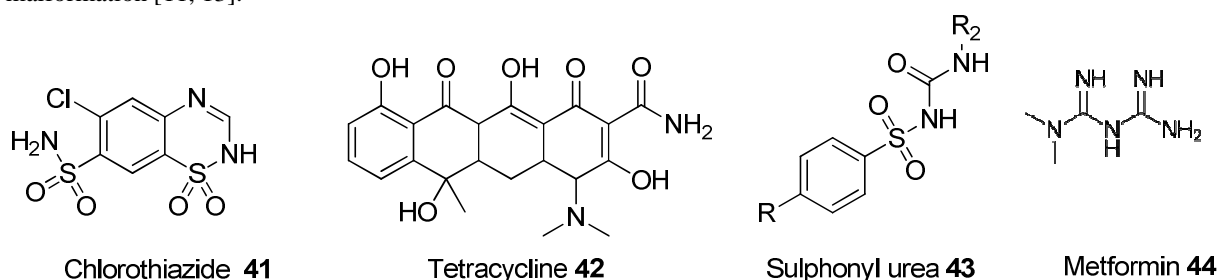


Figure 14. Various contraindicated drugs during pregnancy

**3.3.8 Oral Hypoglycaemic agents**

These are antidiabetic drugs and should not be given during pregnancy as these may cause fetal death while hyperglycaemia can cause malformation and fetal death too (Figure 14). Examples of this drug are sulphonylurea (43), metformin (44) etc. [11, 13].

**3.3.9 Antimalarial drugs**

**Quinine (45):** This drug is not prescribed during pregnancy as they cause abortion and premature labour and also have adverse effects on the fetus (Figure 15).

**3.3.10 Sedatives**

**Diazepam (46):** It cause cleft lip and also produces neonatal depression and addiction. So it should be avoided during pregnancy (Figure 15).

**Chlordiazepoxide (47):** It has adverse effect on CNS and heart. It also causes depression and addiction in neonates. So it should be avoided during pregnancy (Figure 15).

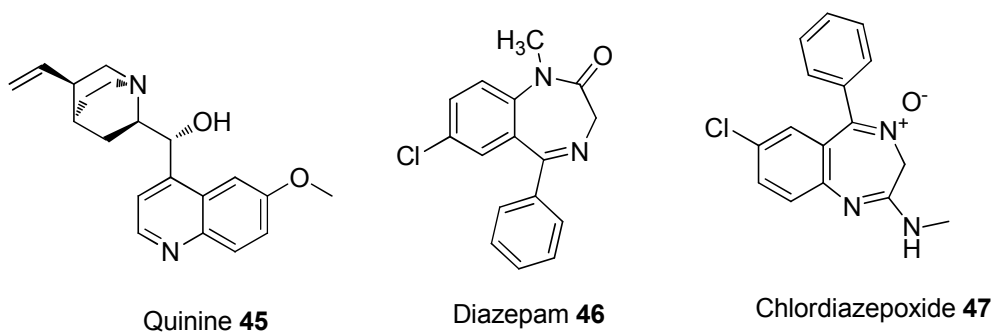


Figure 15. Various contraindicated drugs during pregnancy

**3.3.11 Miscellaneous:** Drugs like antithyroid, antineoplastic, lithium, oestrogen and vaccines like rubella, mumps and measles produces teratogenicity or adverse effect so these should be prohibited during pregnancy.

**Table 3: A list of contraindicated drug during pregnancy [18]**

S. No.	Contraindicated Drugs (in pregnancy)	Function	Side effects (in fetus)
1.	Anti coagulants (Warfarin, coumarin)	Prevent coagulation	Mental retardation in fetus, congenital malformation, eye, abnormalities
2.	Analgesic (Colchicines)	Used in Gout, arthritis	High risk of miscarriage and teratogenic effect
3.	Antitubercular agent (Pyrizinamide, Ethoamide)	Treat tuberculosis	Adverse effect in the liver and cause toxicity
4.	Gastrointestinal agent (Laxative-castor oil, dibasic Sodium phosphate, atropine)	Constipation, spasm in the stomach	High risk of malformation, tachycardia, urinary retention and hyperthermia in neonates
5.	Antihypertensive agent (Reserpine, nitroprusside)	Treatment of chronic hypertension	Cause fetal death and acute hypotension in fetus
6.	Diuretics (Chlorthiazide)	Used in edema	Bone marrow depression and thrombocytopenia
7.	Antimicrobial (Tetracycline)	Used in bacterial infections	Calcification of bones or deposition of calcium in infants
8.	Oral hypoglycaemic agent (Sulfonylurea)	Anti diabetic	Malformation and fetal death
9.	Anti-malarial drugs (Quinine)	Treatment of malaria	Can cause abortion and premature labor
10.	Sedatives (Diazepam, Chlordiazepoxide)	Sleep inducer	Cleft lips and neonatal depression and adverse effect on CNS and heart
11.	Miscellaneous (antithyroid, lithium, estrogen and vaccines)	Used in rubella, mumps and measles	Teratogenicity and adverse Effect

### CONCLUSION

The safe and unsafe medications during pregnancy is a very important prospective of life as it carries the two lives conjoined for the certain period of time. During that time period both the mother and the fetus should be safe, sound and grow healthy. This review summarizes the safe and unsafe list of drugs during pregnancy. The source has been abstracted and compared across the sites and also the text book for the co-reference. With the new discovery of the drugs it is very important for the one to be aware of the contraindications during undergoing any medications. The first safe methods to refrain from such interaction during pregnancy are always consulting the medical practitioner and prescribe the drugs even of OTC category especially during the pregnancy as there are so many complications in it. One important and unrecognized reason is the poor compliance of pregnant women. One study in an article found that majority of the pregnant women would not take a course of drug treatment as prescribed by the doctor as there is the same fear of harming the fetus as the main concern for mothers. It is important that the benefits and risk of stopping treatment to be explained and informed properly. Drug may also be less effective during pregnancy because of pharmacokinetic changes such as increased metabolism. Doses of these drugs may need to be adjusted during pregnancy.

### REFERENCES

- [1] G Curtis, J Schuler (2000). Your Pregnancy Week by Week Fisher Books. [ONLINE] Available at: [https://books.google.com/books/about/Your\\_Pregnancy\\_Week\\_by\\_Week.html?id=1pBXnVrW5nAC](https://books.google.com/books/about/Your_Pregnancy_Week_by_Week.html?id=1pBXnVrW5nAC). [Accessed 10, March 2016].
- [2] RS Waddell, (2006). "FertilityPlus.org".Home Pregnancy Test hCG Levels and FAQ. [ONLINE] Available at: <http://www.fertilityPlus.org/faq/hpt.html>. [Accessed 20, November 2015].
- [3] The Sensible Guide to a healthy pregnancy. [ONLINE] Available at: [www.phac-aspc.gc.ca/hp-gs/pdf/hpguide-eng.pdf](http://www.phac-aspc.gc.ca/hp-gs/pdf/hpguide-eng.pdf). [Accessed 20, November 2015].
- [4] AP Kourtis, JS Read, DJ Jamieson. *New Eng. J. Med.*, 2014, 370(23), 2211-2218.
- [5] U.S. Food and Drug Administration. Dietary Supplement Labeling Guide. Updated April 2005. [ONLINE] Available at: <http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/DietarySupplements/DietarySupplementla>. [Accessed 20, November 2015].
- [6] UNICEF, WHO, World Bank, UN-DESA Population Division. Levels and Trends in Child Mortality. Report 2015. [ONLINE] Available at: [http://www.who.int/maternal\\_child\\_adolescent/documents/levels\\_trends\\_child\\_mortality\\_2015/en/](http://www.who.int/maternal_child_adolescent/documents/levels_trends_child_mortality_2015/en/). [Accessed 20, November 2015].
- [7] Maternal mortality Fact sheet N°348; Updated [ONLINE] Available at: <http://www.who.int/mediacentre/factsheets/fs348/en/>. [Accessed 20, November 2015].
- [8] Taking Medicine During Pregnancy. [ONLINE] Available at: <http://www.webmd.com/baby/guide/taking->

- medicine-during-pregnancy. [Accessed 20, November 2015].
- [9] Drugs contraindicated in pregnancy. [ONLINE] Available at: [http://www.empr.com/drugs\\_contraindicated-in-pregnancy/article/125914/9](http://www.empr.com/drugs_contraindicated-in-pregnancy/article/125914/9). [Accessed 20, November 2015].
- [10] L Bryant, T Fishman. *J. Prim. Health Care*, **2009**, 1(2), 150-151.
- [11] P Nand, KR Kher. A text book of hospital and clinical pharmacy, 13<sup>th</sup> edition, Birla Publication Pvt limited, **2015**, 292-303.
- [12] JM Friedman, JE Polifka (2011). TERIS. Micromedex reproductive risk information system (REPRORISK). Englewood, Colorado: Thomson MICROMEDEX.
- [13] R World Health Organization. ICD-10: International statistical classification of diseases and related health problems, 10th revision. Volume 2. 2nd ed. Geneva: WHO; **2004**. [ONLINE] Available at: [http://www.who.int/classifications/icd/ICD-10\\_2nd\\_ed\\_volume2.pdf](http://www.who.int/classifications/icd/ICD-10_2nd_ed_volume2.pdf) retrieved August 12, 2013. (Accessed 18 October, 2015)
- [14] Available at: <http://www.wolterskluwer CDI.com/>. [Accessed 10, March 2016].
- [15] American College of Obstetricians and Gynecologists. (2009). *Obstet. Gynecol.*, **2009**, 113(2 Pt 1), 451.
- [16] SL Peters, JN Lind, JR Humphrey, JM Friedman, MA Honein, MS Tassinari, CA Moore, LL Mathis, CS Broussard. *Pharmacoepidemiol. Drug Saf.*, **2013**, 22(3), 324-328.
- [17] PG Thorpe, SM Gilboa, S Hernandez-Diaz, J Lind, JD Cragan, G Briggs, S Kweder, JM Friedman, AA Mitchell, MA Honein. *Pharmacoepidemiol. Drug Saf.*, **2013**, 22(9), 1013-1018.
- [18] BW Hesse, DE Nelson, GL Kreps, RT Croyle, NK Arora, BK Rimer, K Viswanath. *Arch. Intern. Med.*, **2005**, 165(22), 2618-2624.