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**STUDYING ABOUT THE BASIC FACTS ABOUT THE HYPERTENSION**

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**ABSTRACT**

*The drug's solubility is a crucial factor in the formulation process. At a certain temperature, pressure, and pH, the solubility of a solute is the concentration of the solute in the solvent. The primary issue with medications that are weakly water-soluble is their low aqueous solubility. Liquid medications are usually formulated using water as the solvent. Most medications have low acidity or basicity and are hardly soluble in water. To far, over 40% of the medications created from novel chemical entities found have low water solubility. Class II and IV medications have weak water solubility, poor dissolution, and limited bioavailability, according to the biopharmaceutical categorization system. With regard to patient convenience and compliance, unique fast dissolving oral films (FDF) have emerged as an alternative to tablet, pill, syrup, and other oral dose forms. Patients of all ages, from children to the elderly, may benefit from fast dissolving oral films when they have trouble swallowing conventional oral solid-dosage forms. The FDF drug delivery systems are a solid dosage form that dissolves or disintegrates in the mouth cavity in a matter of seconds without the need of water or chewing. By improving medication dissolving and reducing the time it takes for pharmaceuticals to take effect, FDF increase their oral bioavailability and decrease how often they need to be taken. Cough, cold, sore throat, allergic diseases, nausea, discomfort, hypertension, and central nervous system problems are all treatable with these formulations. In this article, we'll go over the latest improvements that have been made to oral quick dissolving film's design and development.*

**Keywords: -** Hypertension, Deaths, Oral, Solubility, Liquid.

1. **INTRODUCTION**

Hypertension is a major contributor to the estimated 17 million annual deaths caused by cardiovascular disease (CVD) globally. Minimum 45% of fatalities from heart disease and 51% of deaths from stroke may be attributed to high blood pressure (BP), often known as hypertension. Population increase, aging, and behavioral risk factors such bad nutrition, hazardous use of alcohol, lack of physical exercise, excess weight, and exposure to chronic stress are all contributing to the rise in hypertension prevalence. Tobacco use, obesity, high cholesterol, and type 2 diabetes mellitus are additional health risks (World Health Organization, Switzerland, 2013).

There are several pathophysiological disorders linked to hypertension. Causes of cardiovascular disease include ventricular hypertrophy, endothelial dysfunction, metabolic syndrome, oxidative stress, inflammation, and hereditary susceptibility. Tackling risk factors including smoking, dyslipidemia, and diabetes mellitus may help bring hypertension under control. This highlights the need for antihypertensive medicines that do more than only decrease blood pressure (BP), and instead provide benefits in the prevention and treatment of cardiovascular disease (CVD).

1. **BASIC FACTS OF HYPERTENSION**

The pounding of the heart forces blood into the blood arteries, which then transport the blood to the rest of the body. Blood pressure is the force exerted by the blood on the walls of blood arteries when the heart pumps blood through the body. When blood vessel walls consistently stiffen, a condition known as hypertension develops. If your blood pressure rises in your vessels, your heart may have to work more to pump the same amount of blood.

The majority of people will experience a rise in blood pressure at some time in their lives, but there is currently no definitive way to determine whether or not a patient is hypertensive. The incidence of hypertension increases dramatically with age. Anyone may have high blood pressure (BP), either systolic or diastolic. People younger than 50 years of age are more likely to have increased diastolic pressure. Systolic hypertension develops as we age because bigger arteries lose their pliability and become more rigid. High blood pressure affects at least one-fourth of all adults and more than half of those aged 60 and over. The National Institute for Health and Care Excellence in the United Kingdom (2011) and the World Health Organization in Switzerland (2013) both agree that hypertension is a substantial risk factor for ischemic and hemorrhagic stroke, myocardial infarction, heart failure, chronic renal disease, cognitive decline, and premature mortality.

1. **CHOICES OF ANTIHYPERTENSIVE DRUGS AND GOALS OF THERAPY**

Both hypertension and its consequences, including stroke and heart attack, may be treated with antihypertensive medication. Reducing blood pressure by 5 mmHg is associated with a 34% drop in the risk of stroke and a 21% decrease in the risk of ischemic heart disease, as well as a decreased risk of dementia, heart failure, and death from cardiovascular diseases. Various medication classes have been developed to treat hypertension.

According to the World Health Organization (WHO), not all individuals with hypertension need to take medication, but those with a medium to high risk will need one or more important drugs to reduce their cardio vascular risk. More than two-thirds of hypertensive people will need two or more antihypertensive medications chosen from various pharmacological classes since their condition cannot be managed with a single medication. Table-1. displays the most frequently prescribed antihypertensive medicines.

Reducing cardiovascular disease and death is the primary objective of antihypertensive medication. Reducing blood pressure using a variety of antihypertensive medications has been shown to be effective in minimizing hypertension complications in high-quality clinical trial data. Although various medication classes were found to have distinct advantages specific to certain patient groups, it should be underlined that the perceived risk reduction was directly related to BP decrease rather than the drug class utilized to accomplish it.

Combination treatment is useful because it may help decrease the patient's blood pressure with fewer side effects and adverse reactions at lower medication dosages. Synergistic or additive effects on BP may be produced at lower dosages when medicines with distinct mechanisms of action are combined. Fixed dosage combos have a few drawbacks. One or both of the medications in the fixed dosage combinations may not be at the proper doses to treat certain co morbid diseases. However, for the most part, this is not an issue when dealing with hypertension individuals.

Table-1 Class of drugs used in the treatment of hypertension

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| **S. No.**  | **Category/Class**  | **Examples**  |
| 1  | Thiazide diuretics  | Hydrochrorthiazide, Chrorthiazide, Chlorthalidone, Polythiazide and Epitizide |
| 2  | Calcium channel blockers  | Verapamil, Diltiazem, Nifedipine, Felodipine, Amlodipine, Nimodipine, Clindipine, Nicardipine and Clevidipine |
| 3  | Angiotensin converting enzyme inhibitors  | Captopril, Lisinopril, Enalapril, Ramipril and Fosinopril |
| 4  | Angiotensin receptor blockers  | Losartan, Candesartan, Valsartan, Telmisartan and Olmesartan |
| 5  | Beta blockers  | Propranolol, Carvedilol, Nadolol, Timolol, Pindolol, Labetolol, Atenolol, Esmolol and Betaxolol |
| 6  | Alpha blockers  | Prazosin, Terazosin, Doxazosin, Phenoxybenzamine and Phentolamine |
| 7  | Alpha and Beta blockers  | Labetolol and Carvedilol |
| 8  |  Potassium channel activators  | Diazoxide, Minoxidil, Pinacidil and Nicorandil |
| 9  | Vasodilators  | Hydralazine and Sodium Nitroprusside  |
| 10  | Others  | Tadalafil, Furosemide, Spironolactone, Triamterene, Amiloride, Clonidine and Indapamide |

1. **CONCLUSION**

The aqueous solubility of Carvedilol, Felodipine, Tadalafil, and Telmisartan was significantly improved during SDP preparation utilizing the solvent evaporation technique with PVP-K30 up to 1:3 (drug to polymer ratio). In addition, Box-Behnken design was used for optimization and validation of FDFs of SDP of pharmaceuticals (CdFDF, FnFDF, TdFDF, and TmFDF). The optimized and verified FDFs evaluated showed promising results across a range of properties, including mechanical strength, content homogeneity, surface pH, disintegration time, drug dissolution/release efficiency, ex-vivo permeation, and stability for up to six months. Due to the elimination of first pass metabolism, medicines in FDFs were absorbed more quickly and had greater oral bioavailability up to 1 to 2 hours after buccal injection, according to an in vivo pharmacokinetic investigation. Because of their rapid onset of action, lack of first-pass metabolism, low dosage regimen, increased bioavailability (up to 2-3 fold), and increased patient compliance, it follows that CdFDF, FnFDF, TdFDF, and TmFDF could be commercially exploited for the treatment of hypertension.

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