

Study on Liposomal Drug (Iron) Delivery Market and Competitive Landscape/Activities, Opportunities, and Challenges

By

Parikshith Bhandari

*Dissertation submitted for the partial fulfillment of the
MBA Pharmaceutical Management*

Academic year, 2018-2020



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DATE: 24.06.2020

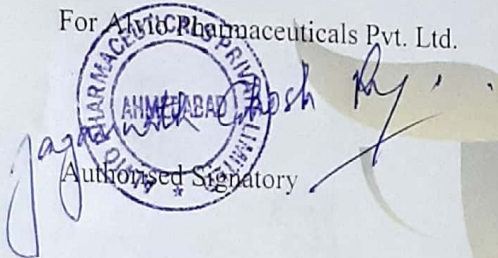
PROJECT COMPLETION CERTIFICATE

This is to certify that **Mr. Parikshith Bhandari S/o Chanchal Singh Bhandari**, pursuing his MBA in Pharmaceutical Management 2018-20 has successfully completed training programme at **ALVIO PHARMACEUTICALS PVT. LTD. FOR PROJECT (NAME: STUDY ON LIPOSOMAL DRUG (IRON) DELIVERY MARKET AND COMPETITIVE LANDSCAPE/ACTIVITIES, OPPORTUNITIES, AND CHALLENGES) UNDER MR. JAGANNATH GHOSH ROY (PRODUCT MANAGER) from 20.02.2020 to 31.05.2020.**

We found him sincere, hardworking, technically sound and result oriented. He worked well as part of a team during his tenure.

We take this opportunity to thank him and wish him all the best for his future.

For Alvio Pharmaceuticals Pvt. Ltd.



Authorised Signatory

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **A study on liposomal drug (Iron) delivery Market and competitive landscape/activities, opportunities and challenges** and submitted by **Parikshith Bhandari**, Enrolment No. **0145** under the supervision of Dr. Sandeep Narula for award of MBA in Pharmaceutical Management at University carried out during the period from 20th February, 2020 to 30th May, 2020 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

Parikshith Bhandari

Signature

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ACKNOWLEDGEMENT

The journey to become a wise and responsible professional does not concise to classroom learnings. The experience that I gained while working with **Alvio Pharmaceuticals Pvt. Ltd., Ahmedabad** during my dissertation period acquainted me with the practical aspect of the course & implementation of the theory in the real field. Any compliments require the effort of many people and this work is no different. My sincere thanks to all for taking us ahead in this journey.

I would like to extend my sincere and heartfelt thanks to **Mr. Manish Kumar Dudhwewala& Mr. Nilesh Kumar Dudhwewala, CEOs, Mr. Manish Mandlia, COO** of Alvio Pharmaceuticals Pvt. Ltd. for providing me an opportunity to learn and develop professionally.

I extend my regards to **Mr. Jagannath Ghosh Roy, PMT Manager** for being constant support and guidance and sharing his expertise and knowledge.

I am grateful to the entire employee of Product Management Team and the entire stuff of Alvio Pharmaceuticals Pvt. Ltd., who helped me to complete this project directly or indirectly.

I also express my special thanks to **Dr. Sandeep Narula** for his guidance throughout the training period.

Lastly, I would like to thank my family for their constant support and for keeping me motivated throughout the journey.

ABSTRACT

Liposomal drug (Iron) delivery Market and competitive landscape/activities, opportunities and challenges

This report is based on the Dissertation 2020 at Alvio Pharmaceuticals Pvt. Ltd. includes all the tasks and activities which were covered from 20th February 2020 to 30th May 2020. The report revolves around the Liposomal Iron which has been very effective in the treatment of Anemia than other Iron groups in this category. The report describes the importance of Iron pyrophosphate and the role it plays in the treatment of Anemia, which leads to chronic kidney disease and chronic heart failure. It is known to occur at all stages of life children, childbearing women pregnant women and elderly patients. Also, to know the different medications of Liposomal Iron available at market. Two areas where liposomes have shown promising affects are the drug delivery and Gene therapy.

Novel medication conveyance frameworks (NDDS) conveyed the dynamic atoms to the objective site in a characterized way for produce the ideal impacts without upsetting the fragile bio-condition. Among numerous accessible colloidal medication conveyance frameworks, Liposomes (a class dependent on phospholipids) have pulled in more consideration than different frameworks because of numerous commendable highlights, for example, phenomenal concoction and organic solidness, great solubilization power, advance intracellular conveyance of bio-dynamic atoms, decrease the take-up of macrophages and embody both hydrophilic just as lipophilic medication particle.

BACKGROUND

Dissertation Period

Every day, life presents me with another test and new chances. Every day encourages me to learn and prepare more. Preparing is a learning procedure of creating aptitudes, information, improving one's capacities, efficiency and execution.

I got this great chance to do thesis preparing (February 20th to 30th May,2020) in **Alvio Pharmaceuticals Pvt.Ltd, Ahmedabad**. This preparation gave me an introduction of getting the hang of, observing and supervision. I was relegated various errands every day for these overviews. It helped me to comprehend the subtleties of preparing the field examiners. I am certain this learning at dissertation preparing will help me in future.

Date	Task assigned	Objective
20th to 28th February	Orientation of all the departments	To know about the work done by all the departments of the company.
2nd March	Assigned with the mentor and understanding the overview of Product Department.	To know about the Product Management team.
3rd to 6th March	Market Research and Competitive Analysis	To learn the market scenario.
7th to 11th March	Secondary Data Provided	For Data Screening
12th March to 10th April	Data Analysis – Competitive Landscape	Analysis
11th to 24th April	Challenges for the drug	Analysis
24th to 27th April	Opportunities	Analysis
1st-7th May	Recommendation & Conclusion	Proposed Solution for problems identified
8th-15th May	Report Drafting	



Alvio Pharmaceuticals is a new generation Pharmaceutical Company engaged in the development, manufacturing, and marketing of Finished Pharmaceutical Formulations. Alvio has committed itself to the task of Easing Human Lives globally by providing high quality and affordable health care alternative to patients by identifying critical markets in different parts of the world.

MISSION

Alvio is on a mission to aid Doctors all over the Global Pharmaceutical Market in “Easing Human Lives” by providing them with a trusted source of High-Quality Medicines.

VISION

Our Vision is to become an International Pharmaceutical Organization trusted and recognized for its Quality and Reputation.

PHILOSOPHY

You Never Walk Alone – Our Philosophy here at Alvio is you are never alone. We all walk together during bad times and during good times!

Alvio targets different therapeutic segment customized to the market we are presently based on the customer’s needs and the requirements. Today Alvio Pharmaceuticals has strongly established in the Ethical Pharmaceuticals Market as a trusted source of high-quality Formulations. Alvio has expanded its range from Chronic Therapy segments like Cardiovascular Medicines, Anti-Diabetics to also include Acute Therapy Segments like Gastroenterology, Anti-Infectives, Analgesics, Anti-Allergic etc.

- ✓ Alvio is currently marketing its products in over 16 states in India and more than 11 countries worldwide.
- ✓ Team of over 300 highly motivated and trained professionals, Alvio is always looking to expand its boundaries and aims to be within reach of every single patient who needs quality medical care.
- ✓ Alvio owes its success to continuous focus on cutting-edge technology and innovative solutions to provide better results and efficacy to the patients while adhering to strict WHO GMP compliance and Manufacturing Practices.

Products of Alvio Pharmaceuticals:

 Acvio P Tablet	 Furoxivio - 500 Tablet
 AcvioSp Tablet	 Itacozio 100 Capsules (1x10)
 Alexo-120 Tablet	 Itacozio 200 Capsules (1x10)
 Alexo-180 Tablet	 Jalocal Tablet
 Alexo-M Tablet	 L-301 Capsules
 Alinzo Tablet	 Lefovio-250 Tablet
 AloferLp Tablet	 Lefovio-250 Tablet..
 Alofer Syrup	 Lefovio-500 Tablet
 Alofer Tablet	 Lefovio-500 Tablet..
 Alonvio Q10 Forte Caps	 Lefovio-Oz Tablet
 Altrib Tablet	 Lulicura Cream
 Altrib-D Tablet	 Payoz-40 Tablet
 Aluxo- 40 Tablet	 Payoz-Dsr Capsule
 Aluxo-80 Tablet	 Payoz-Ls Capsule
 Alvikoff Dx Syrup	 Poxivio-100 Tablet
 Alvikoff-Dx Syrup	 Poxivio-200 Tablet
 Alvikoff-Ls Syrup	 SanivioHand Sanitizer
 Alvikoff-M Tablet	
 Alvikoff-T Expectorant	
 Alvion Capsules	
 Alvion Suspension	
 CarivioTablet..	
 Curaside-Ap Tablet	
 Curaside-Et Tablet	
 Curifix200Tablets	
 Curifix400Tablets	
 Curifix-200 Tablet	
 Fixivio-100 Tablet	
 Fixivio-200 Tablet	
 Fixivio-O Tablet(New)	
 Floravio Capsule	
 Flutivio Nasal Spray	

PROJECT DETAILS

A study on liposomal drug (Iron) delivery Market and competitive landscape/activities, opportunities, and challenges

INTRODUCTION

Anaemia:

Iron deficiency happens when there is diminished degree of haemoglobin in your platelets. Haemoglobin is the protein in your RBCs that is answerable for conveying oxygen to your tissues.

Iron insufficiency paleness is the most well-known sort of weakness and it happens when your body needs more of the mineral iron. Your body needs iron to make haemoglobin. When there isn't enough iron in your circulatory system, the remainder of your body can not get the measure of oxygen it needs.

Each age bunch is defenceless is helpless. Iron inadequacy debilitates the subjective advancement of kids from early stages through the puberty. It harms the resistant system and related with expanded grimness rates.

Iron deficiency in women:

It is assessed by the WHO that all the ladies are somewhat iron lacking and that the greater part of the pregnant ladies in creating nations endure sickness. Indeed, even in industrialized nations, the iron stores are most pregnant ladies are insufficient. At long last, as much as a 30% debilitation of physical work limit and execution is accounted for in iron inadequate and ladies.

Different mediation methodologies to battle iron insufficiency recommends the food-based methodologies and focused on supplementation are especially savvy.

Symptoms:

From the start, iron inadequacy shortcoming can be delicate to such a degree, that it goes unnoticed. In any case, as the body ends up being logically lacking in iron and sickness fuels, the signs and signs heighten.

Iron deficiency anaemia signs and symptom may include:

- Extreme fatigue
- Pale skin
- Chest pain, fast heartbeat, or shortness of breath
- Headache, dizziness, or light-headedness
- Cold hands and feet
- Brittle nails
- Unusual cravings for non-nutritive substances such as ice, dirt or starch

- Poor appetite, especially in infants and children with iron deficiency anaemia.

Causes:

Blood loss:

Blood contains iron within red blood cells. So, if you lose blood, you lose some iron. Women with heavy periods are at high risk of iron deficiency.

Inability to absorb Iron:

Iron from food is absorbed into your circulatory framework in your little stomach related tract. An intestinal issue, for instance, celiac disease, which impacts your stomach related framework's ability to absorb supplements from handled food, can incite iron deficiency whiteness. On the off chance that bit of your little stomach related tract has been going around or removed cautiously, that may impact your ability to hold iron and various enhancements.

Pregnancy:

Without iron supplementation, iron insufficiency sickliness occurs in various pregnant women because their iron stores need to serve their own extended blood volume.

Prevention:

Iron rich food include-

- Red meat and poultry
- Seafood
- Beans
- Dark green leafy vegetables, such as spinach
- Dried fruit, such as raisins and apricots
- Iron fortified cereals, breads, and pastas
- Peas

Risk factors

These groups of people may have an increased risk of iron deficiency anaemia:

- **Women-** Since ladies lose blood during monthly cycle, ladies all in all are at more danger of iron inadequacy pallor.

- **Infants and children-** New-conceived youngsters, especially the people who were low birth weight or imagined impulsively, who don't get enough iron from chest milk or formula may be at risk for iron insufficiency.
- **Vegetarians-** Individuals who don't eat meat may have a more danger of iron lack weakness if they don't eat other iron-rich nourishments.
- **Frequent blood donors-** People who routinely give blood may have an extended threat of iron need shortcoming since blood blessing can deplete iron stores. Low haemoglobin related to blood blessing may be an ephemeral issue helped by eating progressively iron-rich sustenance's. If you are educated that you can't give blood because of low haemoglobin, ask your essential consideration doctor whether you should be concerned.

COMPLICATIONS:

Gentle iron lacks pallor for the most part doesn't cause difficulties. Nonetheless, left untreated, iron lack pallor can get serious and lead to medical issues, including the accompanying:

- **Heart problems-** Iron lack paleness may prompt a quick or sporadic heartbeat. Your heart must pump more blood to make up for the absence of oxygen conveyed in your blood when you are weak. This can prompt an expanded heart or cardiovascular breakdown.
- **Problems during pregnancy-** In pregnant ladies, extreme iron inadequacy sickliness have been connected to untimely births and low birth weight babies. Be that as it may, the condition is preventable in pregnant ladies who get iron enhancements as a component of their pre-birth care.
- **Growth problems-** In new-born children and kids, serious iron insufficiency can prompt weakness just as deferred development and improvement. Also, iron lack frailty is related with an expanded helplessness to contaminations.

Treatment-

Iron is assimilated totally from duodenum and performs huge number of physiological capacities like erythropoiesis, oxidative digestion, and cell insusceptible reactions. Even though iron is one of the most inexhaustible components on earth, iron inadequacy is the most well-known healthful issue

World Health Organization (WHO) appraises that 29% of all ladies of conceptive age have iron deficiency all inclusive.

LIPOSOME DRUG DELIVERY SYSTEM

Liposomes are circular vesicles described by a bilayer of lipids with an inward fluid depression. They have been perceived and broadly utilized as conveyance vehicles for pharmaceuticals. This phospholipids bilayer is reasonable for central cell capacities, for example, motility and shape and gives likewise the capacity to copy the biophysical properties of living cells. In territory of medication, most liposomal tranquilize definitions are endorsed from intra venous application, Intramuscular, and oral conveyance have likewise been inspected.

Liposomes are biphasic and subsequently render them the capacity to go about as bearer for both lipophilic and hydrophilic medications.

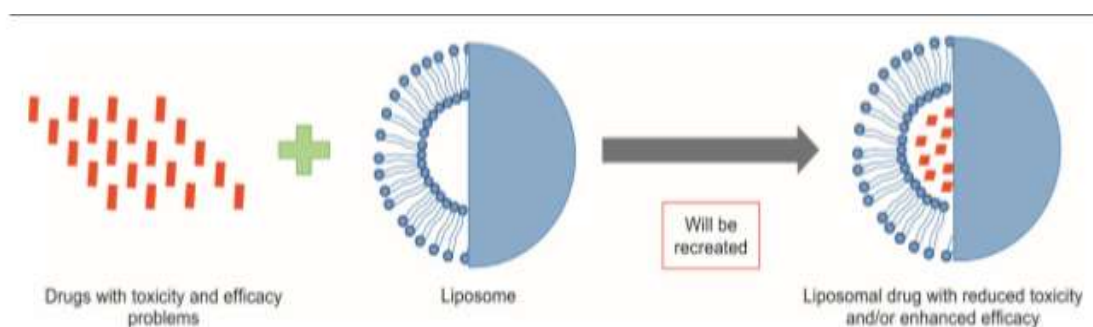


Fig. 1: Formulation of drugs in liposomes¹³

ORAL LIPOSOMAL IRON:

Iron salts like ferrous pyrophosphate are covered with liposome, a spherical structure of a phospholipidic nature that is like those human cell membranes. This preparation crosses the gastric acid barrier and reaches small intestine. In the intestine the M cells due to their low lysozyme content integrally absorb liposomal iron without the need for specific transporters.

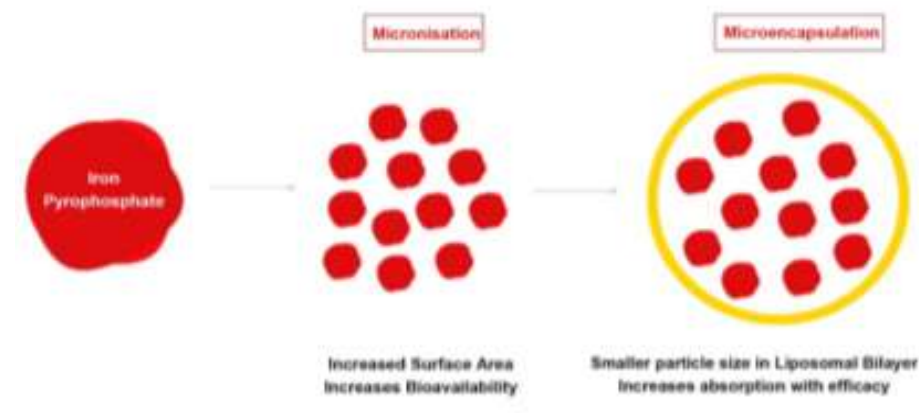
The liposomal protection allows the iron to overcome the free gastric environment, preventing early degradation of the substance and its inactivation and to be absorbed directly. The absorption or bioavailability of liposomal pyrophosphate iron is 3.5 times greater than the free pyrophosphate iron, 2.7 times higher than iron sulphate, and 4.1 times higher compared with iron gluconate. The transportation of iron can be regulated by the size of liposome and it decreased with particle size increasing.

In one of the near examinations, assimilation of liposomal ferrous glycinate was higher than ferrous glycinate and that inhibitory impacts of phytic corrosive and zinc on iron ingestion were diminished by consolidating ferrous glycinate into liposome.

INNOVATIVE DETAILS:

Micronization: It includes decrease in molecule size which builds dissolvability of the iron. Handling into littler particles builds the surface zone of the medication proportion and in this manner the disintegration pace of the medication. This outcomes in expanded bioavailability of inadequately fluid solvent medications.

Microencapsulation: The micronized iron is epitomized by a lipid bilayer film like organic layers, bringing about microencapsulation. The shaped liposome along these lines has external bi layer film and inward centre containing the iron particles.



As the arrangement of external layer of liposomal iron is like that of organic layers, various components might be instrumental in retention. The components of ingestion are numerous and include:

- 1) Straightforward adsorption which assembles neighbourhood combination of liposomal substance at intestinal film with resultant maintenance by scattering or transporters
- 2) Endocytosis with resulting breakdown of liposomal layer by intracellular liposome
- 3) Fusion of lipid bilayer to plasma layer with appearance of substance into the cytoplasm

Mechanism of Ingestion:

As the association of outside film of liposomal iron resembles that of organic layers, different segments might be instrumental in ingestion. The frameworks of ingestion are different and incorporate:

- 1) Straightforward adsorption which fabricates close by centralization of liposomal substance at intestinal layer with resultant maintenance by scattering or transporters.
- 2) Endocytosis with resulting breakdown of liposomal film by intra-cell lysosomes
- 3) Fusion of lipid bilayer to plasma layer with appearance of substance into the cytoplasm

In preliminary thinks about, association of liposomal iron was represented to be related with enormous augmentation in red cell count, haematocrit, serum iron levels and liver iron levels

ADVANTAGES OF LIPOSOMAL IRON:

1. Quicker retention and reclamation of the iron substance: Exploratory evidence suggests liposomal iron recovers iron levels in liver quickly than standard oral iron. Various examinations suggest that liposomal representation of iron relates to redesigned iron ingestion diverged from non-capsulated customary oral iron
2. No acceptance of oxidative harm: Evidence proposes that liposomal iron is related with diminished malondialdehyde levels and increment in super-oxide dismutase levels. This may help in limiting the oxidative harm that is conceivably initiated by ordinary iron
3. Absorption with improved limit: Compared to heme iron, it is better retained and has lower unfavourable reactions most likely because of lower oxidative harm.
4. Physical strength and continuous discharge property: Liposome's are unilamellar vesicles and are nano-sized particles. Lipid bilayer invigorates and may release the substance bit by bit. Persistent release may help in better ingestion of liposomal substance.

Safety of Ferric Pyrophosphate:

The United States Food and Drugs Administration (USFDA) Code of Federal Regulations passes on that ferric pyrophosphate is overall seen as ensured about (GRAS) when used by extraordinary assembling or overseeing arranging. European Food Safety Authority (EFSA) in like way recommends that ferric pyrophosphate.

Constraints of customary Iron treatment:

Iron salts like ferrous sulfate, ferrous fumarate, etc are used in the primary social affair of iron lack whiteness. Iron from these salts is ordinarily found help of various transporters like divalent metal transporter. The important central purposes of these oral iron salts are their wide receptiveness and unimportant effort. In any case, standard oral iron treatment identifies with a gathering of snags. GI prejudice is the most dynamic repulsive impacts related with oral iron. In any case, it remains obfuscated how much every framework adds to the general digestion of iron.

REVIEW OF LITERATURE

1. Oral Liposomal Iron: A Treatment Proposal for Anemia, Sept.- Oct. 2017

It is reported in the studies that about 30% of patients may experience adverse events with the non-liposomal oral iron, which can lead to dose reduction and/or nonadherence to the prescribed treatment, while adverse events occurred only in 3.1% of subjects on oral liposomal iron.⁵⁴ In one comparative study, patients on oral liposomal iron had lower drug-related adverse event as compared with IV iron group (3.1 vs 34.5%, $p < 0.001$). The most experienced adverse events in the liposomal iron group were constipation (4.5%) and diarrhea (4.5%). No serious adverse effects were noted with liposomal iron. The distinctive features of liposomal iron like high bioavailability, lesser side effects, and good compliance make it suitable to be used in patients who require iron administration and are intolerant to oral treatment, IV iron treatment, or lack good absorption.

2. Liposomal Iron for Iron deficiency Anemia for Women in Reproductive Age: Review of Current Evidence

Iron deficiency anemia is the most frequent nutritional deficiency disorder. Conventionally administered oral iron is associated with gastrointestinal intolerance that affects the outcomes and compliance. Liposomal iron is associated with increased absorption without causing significant adverse effects. In this review, we have discussed the technology of liposomal iron preparation, mechanisms of its absorption and clinical evidence on its utility in iron deficiency states in pregnant and non-pregnant women. Based on the available evidence, we compared liposomal iron to conventional oral iron.

Encapsulation of micronized iron in liposomes is associated with lesser exposure to gastric contents, lesser interaction with food contents, no exposure to different digestive juices, targeted delivery of iron and allows lower doses to be administered in lieu of direct absorption without need for protein carriers. The available evidence suggests that liposomal iron significantly increases hemoglobin, ferritin levels in pregnant women as well as in women with iron.

3. **Efficacy of a Novel Food Supplement (Ferfer) Containing Microencapsulated Iron in Liposomal Form in Female Iron Deficiency Anemia** Iron deficiency anemia (IDA) is a highly afflicting condition which affects young children of growing age and reproductive age women in countries of lower economies. Conventional oral iron salts have poor absorption and gastrointestinal side effects. Microencapsulated liposomal iron pyrophosphate is a novel compound with enhanced palatability, higher bioavailability, and consequently increased adherence among people with IDA. This study aims to assess the efficacy of microencapsulated iron pyrophosphate sachets in non-pregnant women with IDA. Four hundred and thirty-seven women completed the trial. The mean serum Hb level at baseline was 8.71 ± 2.24 which increased to 10.47 ± 1.69 by the end of 12 weeks ($p < 0.001$). Treatment of IDA with microencapsulated liposomal iron pyrophosphate sachets significantly increases serum hemoglobin levels in non-pregnant women of reproductive age.

RATIONALE:

Iron deficiency is a profoundly afflicting condition which impacts small kids of developing age and regenerative age ladies in nations of lower economies. Regular oral iron salts have poor assimilation and gastrointestinal side effects. Microencapsulated liposomal iron pyrophosphate is a novel compound with enhanced agreeability, Higher bioavailability, and thusly expanded adherence among individuals with ID.

Physicians are not aware about the Liposomal iron and its efficacy, most of the companies have not readily invested in Liposomal Iron therapy but the liposomal Iron market in future will be a rapidly growing market.

In various complex diseases like anemia and chronic kidney disease microencapsulated liposomal iron gives best efficacy and bio availability.

This is the only therapy which has enhanced palatability. So, for these reasons I choose this topic as a research-oriented topic.

OBJECTIVES:

- To Study the market scenario of Liposomal Drug
- To study the Competitive Landscape of the Liposomal Drug
- To determine the Challenges & Opportunities in the Market for discovery of Liposomal Drug

METHODOLOGY:

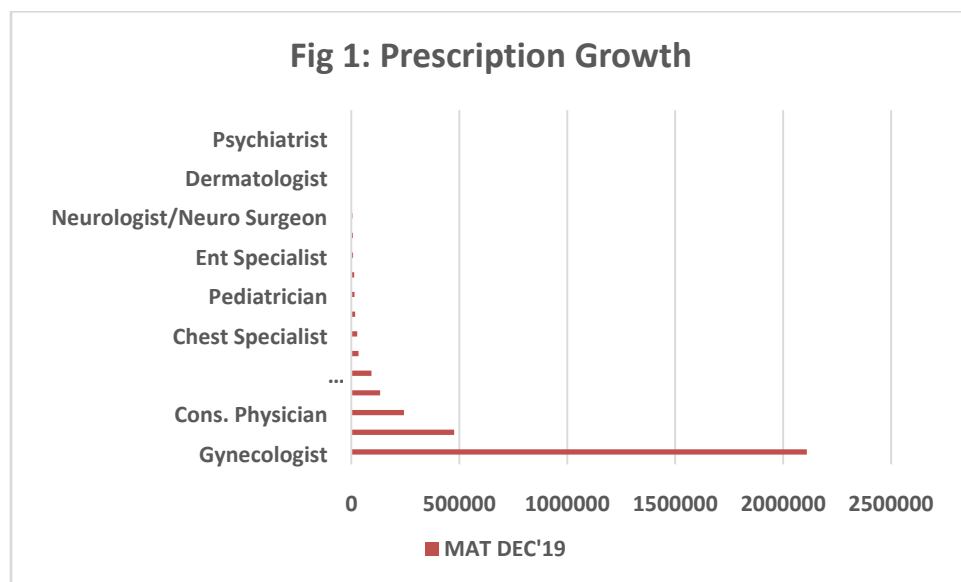
Study Design: Descriptive Study

Study Location: Alvio Pharmaceuticals Pvt.Ltd., Ahmedabad

Data Type: Secondary Data

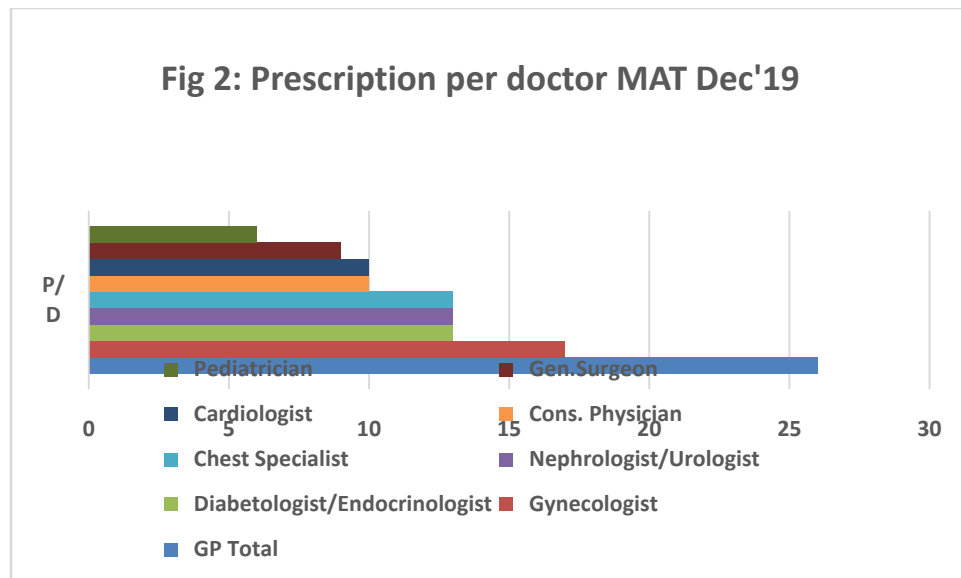
Study Period: 3 months

FINDINGS

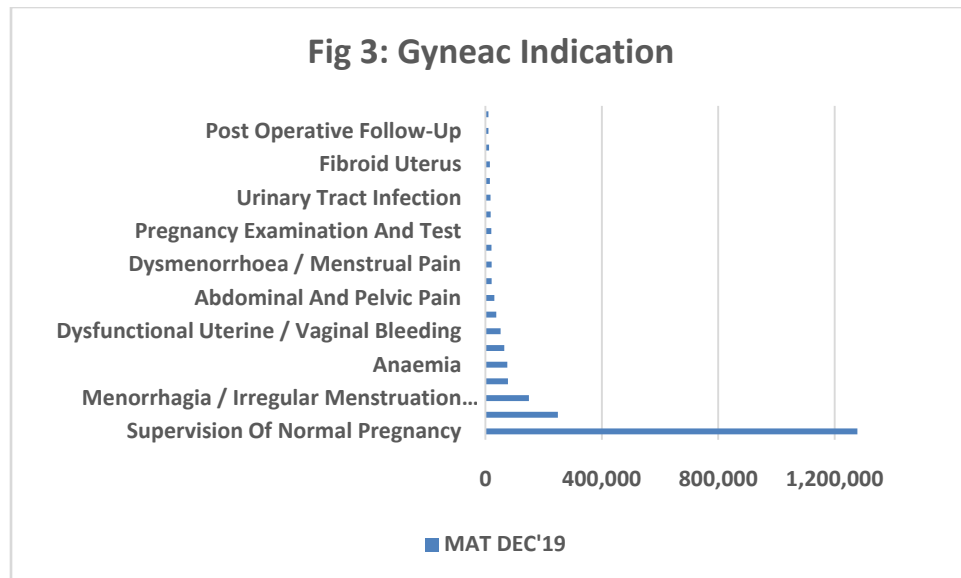


- In reference to figure 1, Out of the total number of prescriptions of Iron pyrophosphate of MAT 18 &19, we can see a very high increase in rise of prescription between the 2 consecutive years.
- The prescription growth amongst the two years has almost doubled which indicates a very good rise in writing habit of Iron pyrophosphate by the doctors.

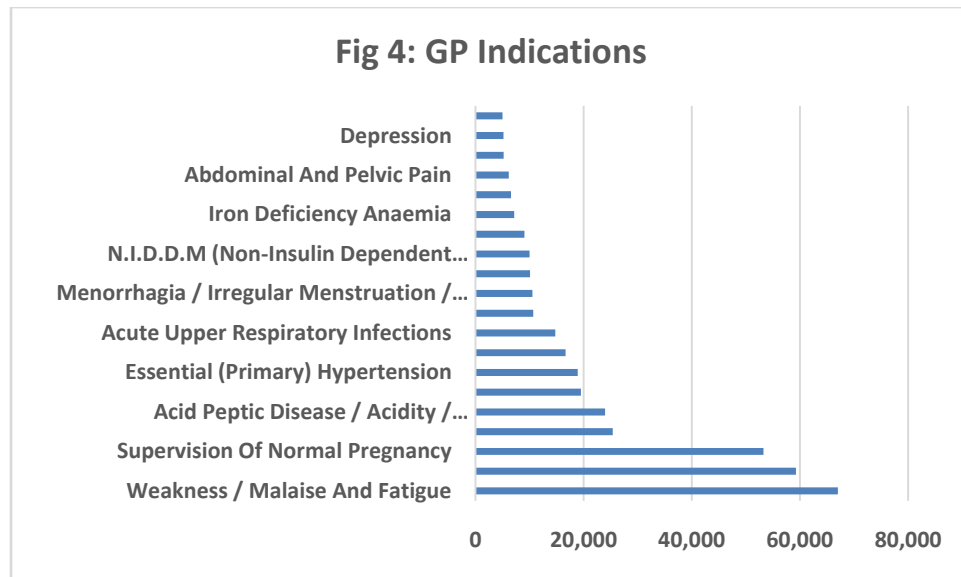
- Gynaecologists has again shown a great interest in prescribing the drug which is followed by consultant physician, diabetologists and chest physicians and followed by the other speciality of doctors.



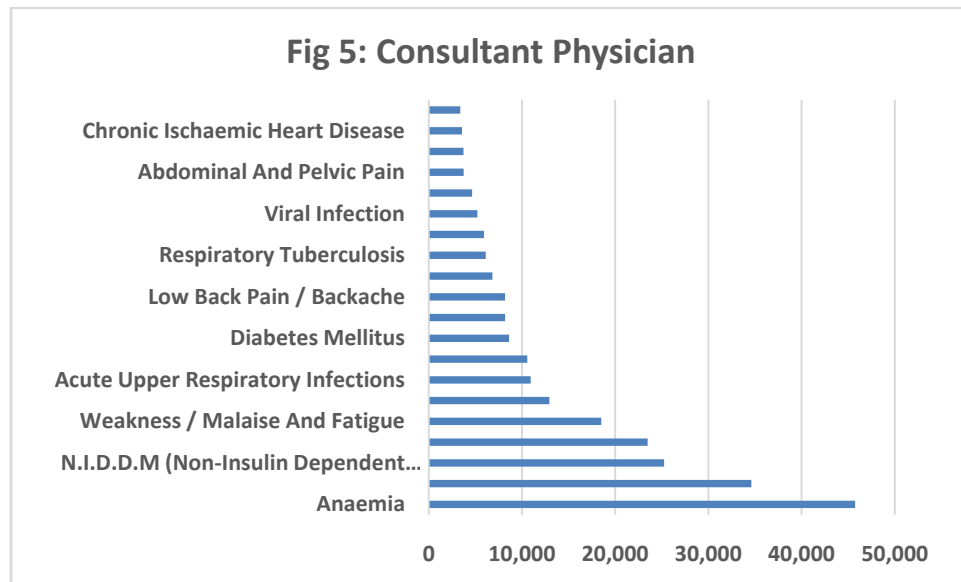
- In reference to figure 2, the MAT'19 data of prescription per doctor show that the maximum per unit prescription were prescribed by General Practitioner which is far more than the rest of the speciality doctors.
- This was followed by gynaecologists, diabetologists, nephrologists and further the rest of the specialities.



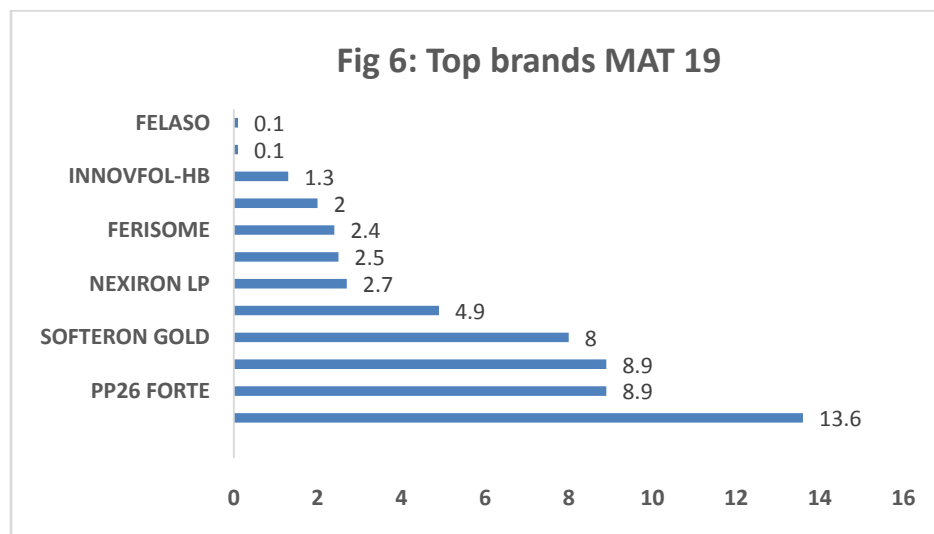
- In reference to figure 3, Gynaecologists prescribe liposomal Iron Pyrophosphate most in Supervision of normal pregnancy, which is followed by Irregular menstruation, Anaemia, Dysfunctional uterine, Pelvic pain which are then followed by the following indications.



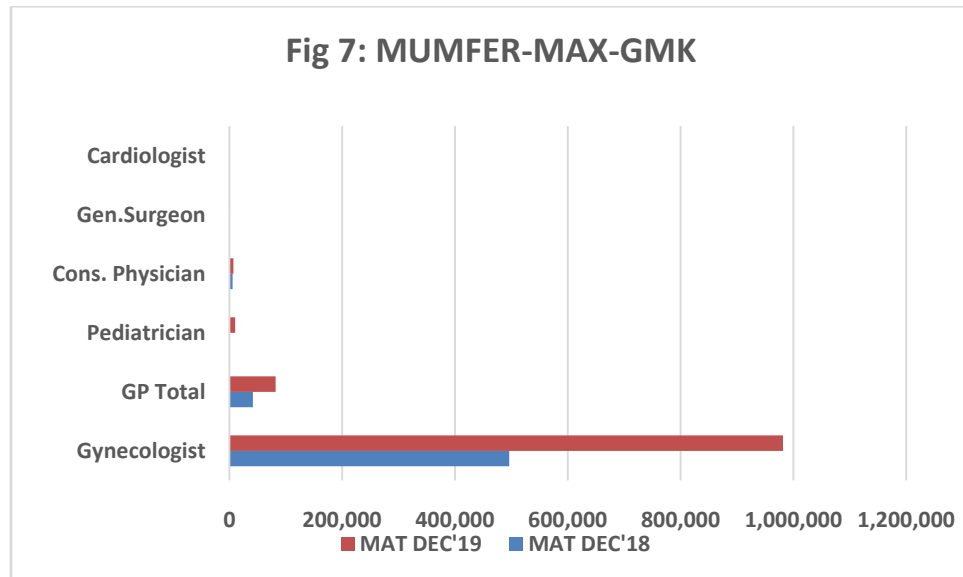
- In reference to figure 4, GP prescribe Liposomal Iron Pyrophosphate most in weakness and fatigue which is followed by indications of Normal pregnancy which was again followed by acid peptic disease followed by hypertension, Upper respiratory infection, Irregular menstruation etc.



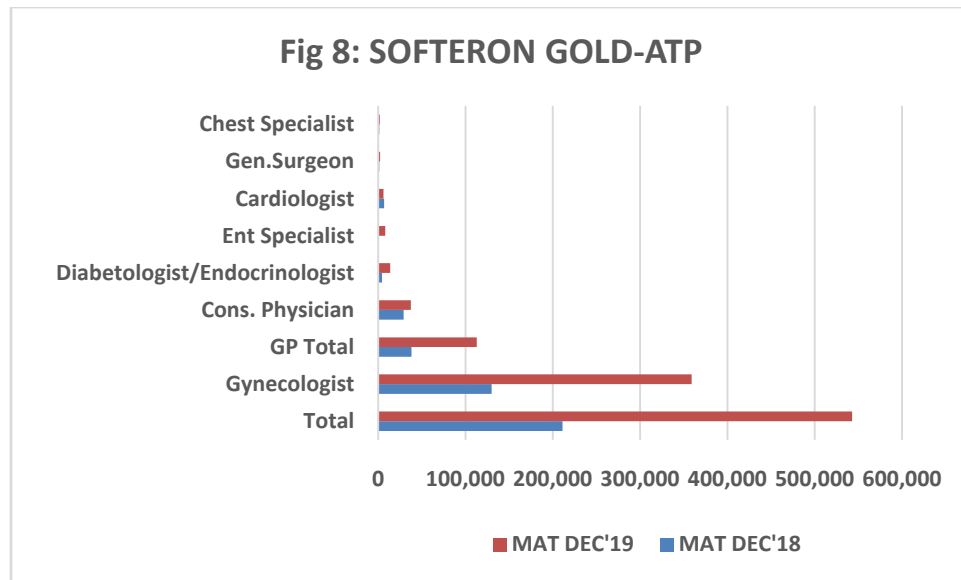
- In reference to figure5, Consultant physician prescribed the drug most in Anaemia. The other indications in which the drug is prescribed are NIDDM, weakness and fatigue, Upper respiratory infections, Diabetes mellitus, Backpains etc.



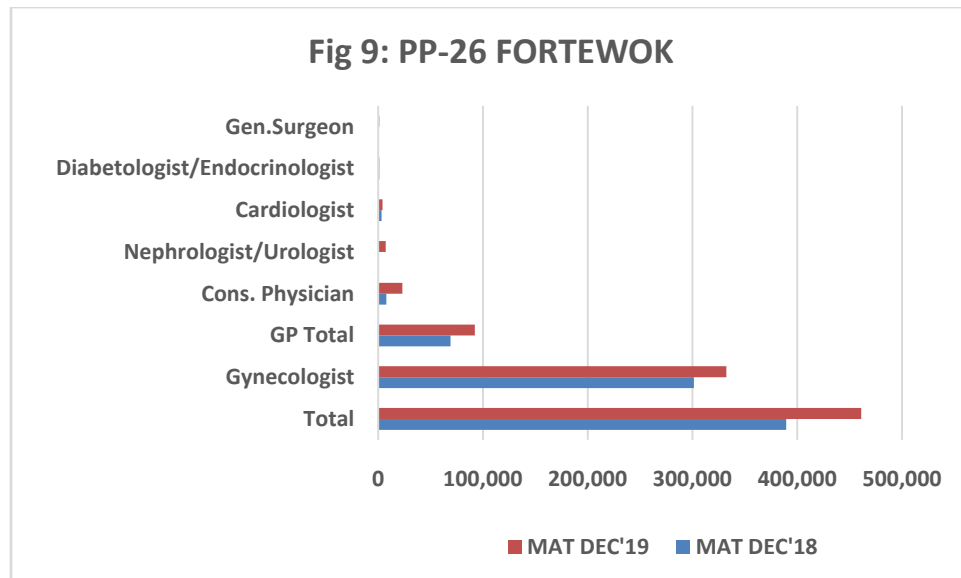
- In reference to figure 6, SEDEROM from Lupin Ltd. has the highest MAT19' value amongst the other competitor brand and is the market leader in this segment.
- This is followed by PP26 FORTE of Wockhardt Ltd. And MUMFER-MAX of Glenmark Pharma, both the brands having the same Market share.



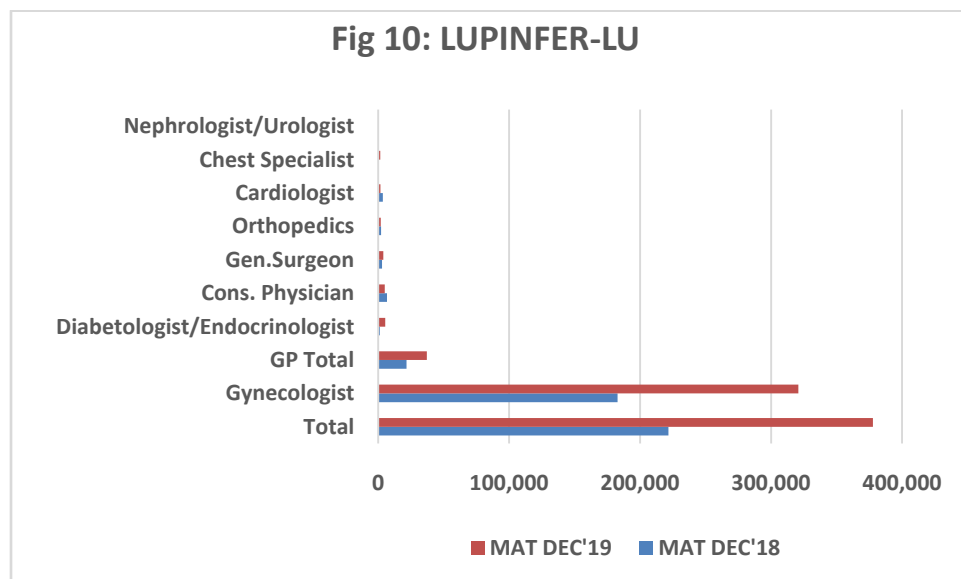
- In reference to figure 7, In respect to MAT Value 18, the brand Mumfer prescription base has increased almost double in the financial year 19.
- Amongst all the specialities, Gynaecologists were the maximum prescribers which is followed by General Practitioners, Paediatrician, Cons. Physician, General surgeon, and Cardiologists.



- In reference to figure 8, out of the total prescription from the following 2 years, Softeron Gold-ATP has been prescribed most by the gynaecologists and the number of prescriptions between the two years have drastically increased.
- Even General Practitioners write a good number of prescriptions and have increased the prescription habit amongst the two years.



- In reference to figure 9, PP-26 also has shown most prescription share by the gynaecologists.
- And, has shown a rise in prescription between the two years which represents a good rise in prescription habit of the doctor.



- In reference to figure 10, between the two consecutive years Lupinfer by Lupin limited has shown a great an increase in prescription in the consecutive 2 years after Mumfer by Glenmark Pharma, Softeron by Aristo Pharma and PP26 by Wockhardt Limited.

- The increase in prescription has also doubled in this scenario in the two consecutive years.

OPPORTUNITIES AND CHALLENGES

After the secondary analysis, it was analysed that most of the prescription of the liposomal iron come from the gynaecologist speciality. So, as a company our opportunity is –

- ✓ To target more and more gynae doctors and make them the Key Opinion leader of our Therapy.
- ✓ We should make a communication message which is more clinically significant and focused on gynaecologist.
- ✓ We should also focus on increasing the Public service representative frequency to these doctors.

The most prescribing speciality of his therapy after gynae is General practitioners. As the company we can use the resources for GP to increase their patient base and involve them in therapy related and brand related CME.

As other speciality does not give any prescriptions in liposomal Iron segment so we can invest more on gynaecologist and general physician.

LIMITATIONS:

Liposomes iron conveyance may maintain a strategic distance from any protein intervened bearer trans-port of iron.

Traditional iron treatment is related with gastrointestinal narrow mindedness, constipation and food bigotry which hampers consistence to treatment. Improving consistence to oral iron is one of the fundamental parts. This type of analysis is limited to physician but not to chemist.

The outcomes taken from the doctors are not taken verbally.

RECOMMENDATION& CONCLUSION

As liposomal iron turns out to be industrially accessible, its viability in bigger populace will turn out to be clear. Future clinical investigations should contrast liposomal iron and diverse industrially accessible iron salts to decide its comparative utility. Additionally, its utilization in pregnancy might be urged to expand consistence to oral iron treatment as accessible iron salts present issues of GI prejudice in larger part of the patients. Studies are required to think about its utility in various evaluations of iron lack pallor to find out its job in serious iron insufficiency sickness also. A near assessment to parenteral iron treatment will disclose to us its utility in extreme iron lack pallor and might end up being a substitute choice to parenteral iron too, whenever demonstrated viable.

Be that as it may, the distinctive component of liposomal iron has been assessed in a few examinations and has appeared to be without regular reactions of customary oral iron supplementation, for example, stomach torment, queasiness, clogging, staining of the mucous, and dung.

In addition, information show that liposomal iron is better tolerated with few/nonattendance of unfavourable impacts and hence, patients are increasingly consistent. The cost effectiveness of the therapy will also play an important role in the success of the therapy.

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THANK YOU

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