1. NAME OF THE MEDICINAL PRODUCT

Emzoron Capsules

2. QUALITATIVEANDQUANTITATIVECOMPOSITION

Eachcapsulecontains FERROUS FUMARATE 45.3 EQ TO ELEMENTAL IRON 14.5,FOLIC ACID 0.3MG,VIT B123MCG,VIT B1 3MG,VIT B6 2MG,COPPER SULPHATE 2.51MG,DICALCIUM PHOSPHATE339.5MG,ZINC SULPHATE 24.7MG EQ TO 10MG

Excipientswithknowneffect
EachcapsulecontainsVIT B1 3MG,VIT B6 2MG,COPPER SULPHATE 2.51MG,DICALCIUM PHOSPHATE339.5MG,ZINC SULPHATE 24.7MG EQ TO 10MG
Forthefulllistofexcipients,see section6.1.

3. PHARMACEUTICALFORM

Capsule,hard

Pinkhardcapsulescontaining4reddish-brownmini-tablets,1yellowmini-tabletand3whitemini-tablets.Thesizeofthecapsuleis‘Size0’(dimensions21.7x7.5mm).

4. CLINICALPARTICULARS

4.1 Therapeuticindications

Treatmentofirondeficiencywithaprovendeficiencyoffolicacid,especiallyonemonthbeforeconceptionanduntilthethird monthofgestation.

4.2 Posologyandmethodofadministration

Posology
1capsuleonceaday.

Methodofadministration
Thecapsulesshouldbeswallowedwholewithplentyofliquidbeforebreakfastormeals.Incaseofpersi stingsideeffects,EmzoronCapsulecanbetakenwithmeals.

Thedurationoftreatmentdependsonseverityoftheirondeficiency.

Paediatricpopulation
EmzoronCapsuleisnotintendedforuseinchildren.

4.3 Contraindications

- Hypersensitivitytotheactivesubstancesor toanyoftheexcipientslistedinsection6.1
- Clinicalmanifestationsofironaccumulation:haemochromatosis,haemosiderosis
- Ironmetabolismdisorders
- Anaemianotaresultof ironorfolicaciddeficiency
- Gastrointestinaldisorders

2.1 Specialwarningsandprecautionsforuse

Inmostcases,thetreatment ofirondeficiencyanaemialeadstogoodtherapeuticoutcomes.However,itisparticularlyimportanttoclarifythecausefor irondeficiencyanaemia.

Irontherapyshouldbecontinuedafterthehaemoglobinhasnormalized(anaemiaisdefinedas haemoglobinlessthan11g/dlinpregnantandlessthan12g/dlinnon-pregnantwomen)inordertoreplenishironstores(usually4-12weeks). Ironmayleadtoablackcolouringofthestool.Thisdoesnothaveanyclinicalrelevance.

ThemetabolismoffolicacidandthemetabolismofvitaminB_{12}areintimatelylinkedsuchthatdeficiencyofeithervitaminleadstoanidenticalmegaloblasticanaemia.NeurologicmanifestationsoffolatedeficiencyoverlapwiththoseofvitaminB_{12}deficiencyandincludecognitiveimpairment,dementia,depression,and,lesscommonly,peripheralneuropathyandsubacutecombineddegenerationofthespinalcord.TheinappropriateadministrationoffolicacidinthepresenceofvitaminB_{12}deficiencymayleadtobothneurologicand,later,hematologicrelapse.

As ascorbicacidhasaneffectonstoneformation,patientswithnephrolithiasisorurolithiasisshouldusecautionwhen taking<Inventedname>.
Inpatientswithsevereorterminalrenalinsufficiency(dialysispatients)adailydoseof50to100mgascorbicacidshouldnot be exceededduetoriskofhyperoxalaemiaandcrystallisationofoxalateinthekidneys.

Ascorbicacid,astrongreducingagent,interfereswithlaboratorytestsinvolvingoxidationandreductionreactions.Falsely-elevatedorfalse-negativetestresultsmaybeobtainedfromplasma,faeces,orurinesamplesdependingonsuchfactors asthedoseofascorbicacidandspecificmethodused.

Thismedicinalproductcontainslactose.Patientswithrarehereditaryproblemsofgalactoseintolerance,theLapplactase deficiencyorglucose-galactosemalabsorptionshouldnottakethismedicine.

2.2 Interactionwithothermedicinalproductsandother formsofinteraction

ConcomitantapplicationofEmzoronCapsulewiththefollowingsubstancescaninfluencetherapeuticefficacy:

Interactionwith	**Possibleeffect**
Acetohydroxamicacid	Reducedabsorptionofacetohydroxamicacid(chelator)andiron
Acetylsalicylicacid,salicylates,NSAR,oxyphenbutazon,phenylbutazon	Enhancedgastrointestinalirritation
Antacids(aluminium,calciumsalts),calciumandmagnesiumpreparations,magnesiumhydroxidecarbonate,magnesiumcarbonate,caffeine(coffeeandtea),milkandmilkproducts,sodiumhydrogencarbonate,nutritionalcomponents(substancescontainingphytates, oxalatesandphosphates),anionexchanger,polystyrolsulfonat	Reducedplasmalevelsofiron
Anticonvulsives(e.g.carbamazepine,phenobarbital,primidone,valproicacid)	Increasingfolicacidingestioncanincreasetheactivity ofhepaticmicrosomalenzymesandthustheclearance oftheanticonvulsantmedications
Antituberculousdrugs,alcohol,glucarpidase	Reducedplasmalevelsoffolate
Auranofin	Reducedactionofauranofin
Bisphosphonates	Reducedplasmalevelsofbisphosphonates

Interactionwith	**Possibleeffect**
Cefdinir	Reducedabsorptionofcefdinir
Chloramphenicol	Reducedactionoffolate,avoidcombination
Cimetidine	Reducedplasmalevelsofiron
Dapsone	Reducedplasmalevelsofironduetoreducedabsorption(chelator)
Entacapone	Reducedplasmalevelsofentacapone(chelator)andiron
Folicacidantagonists(e.g.methotrexate,pyrimethamine,triamterene,trimethoprim,sulfonamides)	Reducedplasmalevelsoffolate
Levodopa,methyldopa	Reducedactionoflevodopaandmethyldopaduetoreducedplasmalevels
Lipoicacid	Combinationwithironshouldbeavoidediflipoicacidisadministeredorally(chelator)
Mycophenolatemofetil	Reducedplasmalevelsofmycophenolatemofetil
Omeprazole	Affectedbioavailabilityofdietaryascorbicacid
Pancreatinandanalogues	Reducedplasmalevelsoffolate
Penicillamine	Reducedplasmalevelsofpenicillamine(chelator)andiron
Primidone	Reducedplasmalevelsoffolate
Quinolones(e.g.ciprofloxacine,levofloxacine,moxifloxacine,ofloxacine,pipemidicacid)	IronsaltsaffecttheabsorptionofQuinolones
Sulfasalazine	Mutualreductionofactionandinhibition ofabsorption(chelator)
Tanninprotein	Reducedactionofiron
Tetracycline	Reducedplasmalevelsoftetracyclineandiron
Thyroidhormones,thyroxine	Reducedplasmalevelsofthyroidhormonesandthyroxine
Tilactase(Aspergillusoryzae)	Reducedactionoftilactase
Tiopronin,dimercaprol	Reducedactionofiron,avoidcombination(chelator);togetherwithirondimercaprolmayformtoxiccomplexes
Trientine(chelatingagent)	Reducedabsorptionofiron,probablybecauseitchelates withironinthegut.Aseparationofatleast2hoursisrec
Zincsalts	Reducedabsorptionofiron

2.3 Fertility,pregnancyandlactation

Pregnancy
Emzoron Capsuleisindicatedfortheadministrationduringpregnancy.

Forpregnantwomenthedailyadministrationoffolatewithironisbeneficialsinceanemiaduringpregnancyisusuallycausedbyadeficiencyofbothnutrients.
Folicaciddeficiency,themostcommoncauseofmegaloblasticanemiainpregnancy,isassociatedwith openneuraltubedefectsandothercomplications.Brea

st-feeding

Iron,folicacidandascorbicacidareexcretedintobreastmilk.
Thismustbetakenintoconsiderationiftheinfantisreceivinganyrespectivesupplements.

Fertility
TherearenodataontheeffectofEmzoron Capsuleonfertility.

2.4 Effectsonabilitytodriveandusemachines

Emzoron Capsulehasnoornegligibleinfluenceontheabilitytodriveandusemachines.

2.5 Undesirableeffects

Summaryofthesafetyprofile
Adversereactionsofsupplementalironsuchasheartburn,nausea,abdominaldiscomfort,constipation,anddiarrheaaredoserelated.Thesideeffectsmayalreadyoccur forthefirstfewdaysoftherapy,andthentheycansubside.

Withfolicacid,hypersensitivityreactions havebeenreportedspontaneously.

Largedosesofascorbicacidarereportedtocausediarrheaandothergastrointestinaldisturbances.Ithasalsobeenstatedthat largedosesmayresultinhyperoxaluriaandtheformationofrenalcalciumoxalatecalculi(seesection4.9).

Tabulatedlistofadversereactionsrelatedtotheactivesubstancesofthemedicinalproduct

	Frequencynotknown (cannotbeestimatedfromtheavailabledata)	
	OralFerrousfumarate	**OralFolicacid**
Immunesystemdisorders	hypersensitivityreactionsincludinganaphylaxis	hypersensitivityreactionsincludinganaphylacticreaction
Metabolismandnutritionddisorders	haemosiderosis/haemochromatosis(incaseofironoverload)	
Gastrointestinal disorders	gastrointestinalirritationandabdominalpainwithnauseaandvomiting,diarrhoea,constipation,blackcolouredfaeces,heartburn	
Skinandsubcutaneoustissuedisorders	hypersensitivityreactionssuchasrash,pruritus,urticaria,erythema,oedema,photosensitivity	hypersensitivityreactionssuchasrash,pruritus,urticaria

Reportingofsuspectedadversereactions
Reportingsuspectedadversereactionsafter authorizationofthemedicinalproductisimportant.Itallowscontinuedmonitoringofthebenefit/riskbalanceofthemedicinalproduct.HealthcareprofessionalsareaskedtoreportanysuspectedadversereactionsviathenationalreportingsystemlistedinAppendixV:

2.6 Overdose

Acuteirontoxicityoccurs afteringestionoflargequantitiesofironsalts.Thiscanresultinseverenecrotizinggastritiswithvomiting,haemorrhage and diarrhea,followedbycirculatorycollapse.Increasedcapillary

permeability,reducedplasmavolume,increasedcardiacoutput,andsuddencardiovascularcollapsemayoccurinacuteironintoxication.
Chronicirontoxicityoriron overloadisvirtuallyalwaysduetocausesotherthaningestionofironsalts,mostcommonbeingthegivingofrepeatedbloodtransfusionstotreathemolytic anemia,notablythethalassemia's.

Thetreatmentofacuteandchronicirontoxicityinvolvestheuseofironchelators.Theagentincommonuseisdeferoxamine,whichformsacomplexwithferriciron.Thiscomplexisexcretedintheurine.Forfurtherinformationonposologyandmethodofadministration,pleaserefer totheSummaryofProductCharacteristicsofdeferoxamine.

Oralfolicacidusuallyisnottoxic.Evenwithdoses ashighas15mgperday,therehavebeennosubstantiatedreportsofsideeffects.

Highoralsingledosesofascorbicacid,exceedingthetolerableupperintakelevelof2,000mg,cancauseosmoticinduceddiarrhoeaandothergastrointestinaldisturbances,haemolysisinpatientswithG6PDdeficiency,hyperoxaluria,formationofrenalcalciumoxalatecalculi.

3. PHARMACOLOGICALPROPERTIES

3.1 Pharmacodynamicproperties

Pharmacotherapeuticgroup:antiacademicpreparations,ironinothercombinationsATCcode: B03AE10

Emzoron Capsulecontainstheactiveingredients ferrousfumarate,folicacidandascorbicacidinmini-tablets. Theferrousfumaratemini-tabletshaveaprolongedreleaseformulationtopreventhighlocaliron concentrationswhichcanirritatethemucosa.

Thispreparationissuitablefortherestorationofnormalironandfolicacidlevelsinthebloodduringpregnancy,especiallyonemonthbeforeconceptionanduntilthethirdmonthofgestation.Thus,itpreventscomplications,e.g. anemia,abortions, hemorrhages,pretermdeliveriesandmentaldevelopmentdisordersofthechildduetoironandfolicaciddeficiency.

Supplementationwithfolicacidisrecommendedtopreventcongenitalmalformationsincludingneural tubedefects.Neuraltubedefectsdevelopinthefirstweeksafter conception,aperiodduringwhichpregnancymaynothavebeendiagnosedyet,thussupplementationwithfolic acidisessentialatthestagewhenpregnancyisbeingplanned.
Ascorbicacidmaystimulateironabsorptionpartlybyformingsolubleiron-ascorbatechelatesandpartlyby reducingferriciron(Fe^{3+})tothemoresolubleferrousform(Fe^{2+}).Anenhancedabsorptionoftheironpresentin Emzoron Capsulebythecontainedascorbicacidhasnotbeendemonstrated.

3.2 Pharmacokineticproperties

Absorption

- Theamountofabsorbedironvariesbetween5and35%.
- Folic acidisabsorbedmainlyintheupperintestinaltract(duodenum,jejunum).
- Ascorbicacidisreadilyabsorbedfromthegastrointestinaltract.

Distribution

- Mostabsorbedironisboundtotransferrinandtransportedtothebonemarrowwhereitisincorporatedintohemoglobin;theremainderiscontainedwithinthestorageforms,ferritinor

hemosiderin,oras myoglobin,withsmalleramountsoccurringinhaem-containingenzymesorinplasmaboundtotransferrin.

- Onceabsorbed,folateistransportedrapidlytotissuesasCH_3H_4PteGlu(5-methyltetrahydrofolate).Althoughcertainplasmaproteinsdobindfolatederivatives,theyhaveagreateraffinityfornon-methylatedanalogues.
- Afterabsorptionascorbicacidiswidelydistributedinthebodytissues.Plasmaconcentrationsofascorbicacidriseswithincreasingdoseuntilaplateauisreachedwithdosesofabout90to150mgdaily.

Biotransformationandelimination

- Onlyverysmallamountsofironareexcretedasthemajorityreleasedafterthedestructionofthehemoglobinmoleculeisre-used.Thisconservationofbodyiron,andlackofanexcretorymechanismforexcessiron,isthereasonforthedevelopmentofironoverloadwithexcessiverontherapyorrepeated transfusions.
- Theliveractivelyreducesandmethylatesfolicacidanddi-ortetrahydrofolateandthentransportstheCH3H4PteGluintobileforreabsorptionbythegutandsubsequent deliverytotissues.Folatemetabolitesareeliminatedintheurine
- Ascorbicacidisreversiblyoxidizedtodehydroascorbicacid;someismetabolizedtoascorbate-2-sulfate,whichisinactive,andoxalicacid.Ascorbicacidanditsmetabolitesareexcretedintheurine.

3.3 Preclinicalsafetydata

Non-clinicaldatarevealnospecialhazardforhumansbasedonconventionalstudiesofsafetypharmacology,repeateddosetoxicity,genotoxicity,carcinogenicpotential,toxicitytoreproductionanddevelopment.

4. PHARMACEUTICALPARTICULARS

4.1 Listofexcipients

Lactosemonohydrate
Polyacrylatedispersion30%
Colloidalanhydroussilica
Magnesiumstearate
Microcrystallinecellulose
Stearicacid
Erythrosine(E127)
Redironoxide(E172)
Blackironoxide(E172)
Titaniumdioxide(E171)
Gelatin

4.2 Incompatibilities

Notapplicable.

4.3 Shelflife

30months

4.4 Specialprecautionsforstorage

Donotstoreabove30°C.

4.5 Natureandcontentsofcontainer

10,20,28,30,50,56,60,84,90,98and100capsulesinPVC/aluminumblisterpacks.Notallpacksizesmaybemarketed.

4.6 Specialprecautionsfordisposal

Nospecialrequirements.

5. MARKETINGAUTHORISATIONHOLDER

Emzor pharmaceutical Industries, Plot 3c Block A aswani market road,
Isolo-oshodi expressway Lagos

6. MARKETINGAUTHORISATIONNUMBER(S)

NA

7. DATEOFFIRSTAUTHORISATION/RENEWALOFTHEAUTHORISATION

NA

8. DATEOFREVISIONOFTHETEXT

NA