| **Doctor of pharmacy program** | | **Pharmacy skill laboratory (PHAR 321)** | |
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| **Students name:** | **Saba’ Jamhour**  **Majdoleen Masalma** | **Students number:** | **1151631**  **1152283** |
| **Experiment name:** | **Ferrous Sulfate syrup** | **Experiment number:** | **EXP 1.1**  **EXP 1.2**  **EXP 1.3** |
|  | **Cough syrup** |  |
| **Magnesium Carbonate Mixture** |

Product Formula :

*EXP1.1 : ferrous sulfate syrup (FeSO4)*

*Exp1.2: Cough syrup (DiphenylhydramineHClC17H21NO.HCl)*

*Exp1.3 : Magnesium carbonate mixture (Magnesium carbonate MgCO3)*

EXP(1.1):

| ***NO.*** | ***Ingredients*** | ***Quantity*** | ***Dispensed by*** | ***Checked by*** |
| --- | --- | --- | --- | --- |
| 1 | Ferrous sulfate | 4g |  |  |
| 2 | Citric acid , hydrous | 0.21g |  |  |
| 3 | Peppermint spirit | 0.2ml |  |  |
| 4 | Sucrose | 66.7g |  |  |
| 5 | Purified water | qs 100ml |  |  |

EXP(1.2):

| ***NO.*** | ***Ingredients*** | ***Quantity*** | ***Dispensed by*** | ***Checked by*** |
| --- | --- | --- | --- | --- |
| 1 | Diphynylhydramine | 0.28g |  |  |
| 2 | Ammonium chloride | 2.7g |  |  |
| 3 | Sodium citrate | 1.14g |  |  |
| 4 | Menthol | 20ml |  |  |
| 5 | Syrup | qs 100ml |  |  |

***Exp(1.3):***

| ***NO.*** | ***Ingredients*** | ***Quantity*** | ***Dispensed by*** | ***Checked by*** |
| --- | --- | --- | --- | --- |
| ***1*** | Light Magnesium Carbonate BP | *5 g* |  |  |
| ***2*** | Sodium Bicarbonate BP | *8 g* |  |  |
| ***3*** | Double strength Chloroform Water BP | *50 ml* |  |  |
| ***4*** | Water | *qs. 100 ml* |  |  |

**\*PHARMACEUTICAL DRUG IN PHARMACY:**

Exp(1.1):

Trade name :

Company :

Active pharmaceutical ingredient : Ferrous Sulfate

Exp(1.2):

Trade name :

Company :

Active pharmaceutical ingredient: Diphenyl hydramine HCl & Sodium Citrate

Exp(1.3)

Trade name :

Company :

Active pharmaceutical ingredient: Magnesium Carbonate & sodium Bicarbonate

**About product :**

***Product name:*** *EXP(1.1) Ferrous sulfate syrup , EXP(1.2) Cough syrup ,*

*EXP(1.3) Magnesium carbonate mixture .*

*Product components and their role:*

**EXP 1-1:**

| **No.** | **Ingredient** | **Role** |
| --- | --- | --- |
| 1- | Ferrous sulfate | Iron source for iron deficiency anemia |
| 2- | Citric acid ,hydrous | Increases the solubility by decreasing PH, antioxidant |
| 3- | Sucrose | Sweetener and preservative |
| 4- | Peppermint spirit | Flavoring agent |
| 5- | Purified water | Vehicle |

**EXP 1-2:**

| **NO.** | **Ingredient** | **Role** |
| --- | --- | --- |
| 1 | Diphenhydramine | Antihistamine agent |
| 2 | Ammonium chloride | Expectorant |
| 3 | Sodium citrate | Expectorant |
| 4 | Menthol | Flavor |
| 5 | Syrup | Vehicle, solvent, sweetening agent |

**EXP 1-3:**

| **NO.** | **Ingredient** | **Role** |
| --- | --- | --- |
| 1 | Light Magnesium Carbonate BP | Antacid |
| 2 | Sodium Bicarbonate BP | Alkalization agent |
| 3 | Double strength Chloroform Water BP | Preservative and flavoring agent |
| 4 | Water | Vehicle |
| 5 | Peppermint oil | Flavoring agent |

**Counseling:**

***Indication:***

EXP 1-1: Ferrous sulfate syrup provides iron for red blood cells production. For iron-deficiency anemia.

Exp 1-2:  indicated in the control of dry, unproductive cough, and in the alleviation of nasal and bronchial congestion.

Exp 1-3: magnesium carbonate mixture, as antacid, to decrease stomach acidity to relief dyspepsia.

***Administration:***

Exp 1-1: ferrous sulfate is usually taken three times a day between meals. It should be taken on an empty stomach, at least 1 hour before or 2 hours after eating.

Exp 1-2: For children (1-5 year): 2.5ml, Children (6-12y): 5ml , Adults 5 - 10 ml every four hours. Don’t take more than 6 dose in 24 hours, Must not be given to who is under age of one year.

Exp 1-3: Adults Dose: 10 ml in water, the dose may be repeated three times a day. The elderly should be used with caution. It is not recommended for children.

***Adverse effects:***

Exp 1-1: stools will turn dark; this effect is harmless teeth may blacken, stomach upset or constipation.

Exp 1-2: dry mouth, drowsiness or dizziness.

Exp 1-3: stomach upset, diarrhea, [Cough](https://www.tabletwise.com/health/cough), Swelling of feet or lower legs, [Muscle pain or twitching](https://www.tabletwise.com/health/itching), Frequent urge to urinate, Rapid breathing

***Storage conditions:***

Exp 1-1:

Store at room temperature between 59-86 degrees F (15-30 degrees C) away from light and moisture. Do not freeze liquid forms of this medication. Keep all medicines away from children and pets. Do not flush medications down the toilet or pour them into a drain unless instructed to do so. Properly discard this product when it is expired or no longer needed. Consult your pharmacist or local waste disposal company for more details about how to safely discard your product.

Exp 1-2:

Store below 25°C.  
Keep container tightly closed.  
Protect from light.  
KEEP OUT OF THE REACH OF CHILDREN.

Exp 1-3:

Do not store above 25ºC.

preserve in well closed container.

**About experiment:**

CALCULATIONS:

Exp(1.2): we multiply each value by 20 to achieve the 100 ml ,because they are prescribed for 5ml in the manual :

eg: Diphenylhydramine HCL: 14 mg \*20 =280 mg = 0.28 g

Exp(1.3) : 100 ml were prepared of the mixture so instead of using the values prescribed to do 1000 ml , each value was multiplied by 0.1, eg: light magnesium carbonate :

50 g 1000 ml 

x 100 ml

x = 50\*100/1000= 5 g

**POST LABORATORY QUESTIONS:**

**Q1*:*** Crystallization might occur during fast cooling . How would this problem be fixed? And how to prevent it?

*Cooling down at a slow rate can minimize crystallization and not cooling too fast; to prevent it we can dilute the drug with more solvent or adding a co solvent like10% glycerol and mixing well.*

**Q2:**write down the equation of color changes in exercise 1 and calculate the amount of Fe in the preparation ?

2FeSO4(s) 🡪 Fe2O3(s) +SO2 (g) +SO3 (g)

Ahydrous ferrous sulfate(White) 🡪 ferric oxide (Brown)

**Q3 :** what are the different kinds of coughing and in which case do we not give cough syrup?

*two kinds of cough are:*

1. *Productive coughs which produce excess mucus or phlegm, which can be described as 'mucus' or 'chesty'*
2. *Unproductive coughs which produce no mucus or phlegm, which can be described as 'dry' or 'tickly'*

*Cough syrup shouldn’t be given to children under one year .*

**Q4 :**what are some important pieces of advice to give to patients taking cough syrup?

1. *This medication should not be used during pregnancy unless the benefits outweigh the risks.*
2. *Talk to your doctor or pharmacist about using this product if you have serious kidney or liver disease, high blood pressure, heart or thyroid disease, diabetes, asthma, chronic lung disease or shortness of breath, persistent or chronic cough or glaucoma.*
3. *Stop taking the medication and seek immediate medical attention if any of the following occur:*

*signs of an allergic reaction (hives; difficulty breathing; swelling of the face, tongue, or throat)*

1. *Do not take a double dose to make up for a missed one.*
2. *Tell your doctor if you have any allergic reactions about Diphenylhydramine .*

**MAIN LABEL: ( for experiment 1.1 ) :**

**Pharmacy name**:MASA Pharmacy

**Pharmacist name**: Saba’ Jamhour

**Partner name**: Majdoleen Almasalma

**Product name:** Ferous Sulfate Syrup

**Product strength:** 40mg\ml

**Expiration date:** 1 month

**Amount prepared:** 100 ml

**Use:** Iron supplement and in anemia

**AUXILAARY LABEL:**

* Store in cool and dark place
* Keep away from direct heat and light
* Away from reach of children

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**MAIN LABEL: ( experiment 1.2 )**

**Pharmacy name**:MASA Pharmacy

**Pharmacist name:** Saba’ Jamhour

**Partner name:** Majdoleen Almasalma

**Product name:** Cough syrup

**Product strength**: 2.8 mg / ml

**Expiration date:** 1 month

**Amount prepared:** 100 ml

**Use:** for cough

**AUXILAARY LABEL**:

* Store in cool and dark place.
* Keep away from direct heat and light
* Away from reach of Children

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**MAIN LABEL: ( for experiment 1.3 )**

**Pharmacy name:** MASA Pharmacy

**Pharmacist name:** Saba’ Jamhour

**Partner name:** Majdoleen Almaslma

**Product name:** Magnesium Carbonate Mixture BPC

**Product strength:** 50mg / ml of light magnesium carbonate BP

80 mg/ ml of sodium bicarbonate BP

**Expiration date**: 1 month

**Amount prepared:** 100 ml

**Use:** anti –acid

**AUXILAARY LABEL:**

* Shake well before use
* Keep away from direct heat and light
* Away from reach of children

**Compounder’s signature: -------------------------------------------------**

**Lab supervisor’s signature: --------------------------------------------------**