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| Doctor of pharmacy program | | Pharmacy skill laboratory (PHAR 321) | |
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| Students name: | Fairouz Zayed  Dana Sadaqa | Students numbers: | 1160750  1160832 |
| Experiment name: | Ferrous sulfate syrup | Experiment number: | 1.1 |

**Product formula:**

FeSO4.7H2O 🡪 FeSO4 + 7H2O

Green White

(Oxidation reaction) 2FeSO4(s)🡪Fe2O5(S)+ SO2(g)+SO3(g)

Green brown

| No. | Ingredients | Quantity | Dispensed by | Checked by |
| --- | --- | --- | --- | --- |
| 1 | Ferrous sulfate | 7.32 g | Dana & Fairouz | Dr. firas |
| 2 | Citric acid monohydrate | 0.21 g | Dana & Fairouz | Dr. firas |
| 3 | Peppermint spirit | 0.02 ml | Dana & Fairouz | Dr. firas |
| 4 | Syrup qs | 100 ml | Dana & Fairouz | Dr. firas |

**Pharmaceutical drug in pharmacy:**

* Trade name: Ferodan
* Company: Odan
* Active pharmaceutical ingredient (s): ferrous sulfate

**About product:**

Product name: Ferrous sulfate syrup

Product’s components and their roles:

| No. | Ingredient | Role |
| --- | --- | --- |
| 1 | Ferrous sulfate | API : For iron deficiency anemia |
| 2 | Citric acid | Stabilizing agent , solubilizing agent (prevent crystallization of sugar) |
| 3 | Peppermint spirit | Flavoring agent |
| 4 | Syrup | Solvent, sweetener and preservative |

**Counseling:**

* **Indication** (**Why the medicine is given**): for iron deficiency anemia
* **Administration (How to use it):**

600 mg daily in divided doses, dilute and take by straw and avoid discoloration of teeth.

Take on an empty stomach or after food to avoid gastrointestinal side effects

* **Adverse effects**: black stools, discoloration of teeth, constipation, upset stomach, many drug interactions (with antibiotics and antiacids).
* **Storage conditions**:

Keep in cool and dark place away from direct heat and light (not more than 24C).

Store in dry place (to avoid oxidation)

\*\*Avoid storage below 4℃ because it results in sugar crystallization, which affects uniformity and stability.

**About experiment:**

* Calculations:
* FeSO4 🡪 FeSO4 .7H2O

4g 🡪 ??

151.91 g/mol🡪 278.02 g/mol

Amount used of FeSO4 .7H2O= 7.32 g

* Citric acid🡪 citric acid. H2O

2.1 g 🡪 ??

192 g/mol🡪 210.1 g/mol

The amount used of citric acid. H2O= 0.21 g

* Dosage strength(w/v): 7.32g/ 100 ml = 7.32% ferrous sulfate
* Peppermint spirit amount was decreased to 0.02 ml due to its high concentration.
* 100 ml syrup was prepared instead of 1000 ml, and the weights were modified accordingly.

**Main label:**

**Pharmacy name**: Harvard pharmacy

**Pharmacist name**: Fairouz Zayed

**Partner name**: Dana Sadaqa

**Patient name**: Mark Sloan

**Product name**: ferrous sulfate syrup (Remington)

**Product strength:** ferrous sulfate 7.32% (w/v)

**Expiration** **date**: 1 week

**Amount prepared**: 100 ml

**Use**: iron deficiency anemia

**Auxiliary label:**

* store in cool and dark place
* keep away from direct heat and light
* keep away from the reach of children
* dilute before administration and use a straw

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| Doctor of pharmacy program | | Pharmacy skill laboratory (PHAR 321) | |
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| Students name: | Dana Sadaqa  Fairouz Zayed | Students numbers: | 1160832  1160750 |
| Experiment name: | Cough syrup | Experiment number: | 1.2 |

| No. | Ingredients | Quantity | Dispensed by | Checked by |
| --- | --- | --- | --- | --- |
| 1 | Diphenylhydramine HCl | 280mg | Fairouz and Dana | Dr. Firas |
| 2 | Ammonium chloride | 2.7g | Fairouz and Dana | Dr. Firas |
| 3 | Sodium citrate | 1.14g | Fairouz and Dana | Dr. Firas |
| 4 | Menthol | 20mg | Fairouz and Dana | Dr. Firas |
| 5 | Syrup qs | 100ml | Fairouz and Dana | Dr. Firas |

**Pharmaceutical drug in pharmacy:**

* Trade name: Sovidryl
* Company: Sovia altis
* Active pharmaceutical ingredient (s): Diphenylhydramine HCl

**About product:**

Product name: Diphenylhydramine cough syrup

Product’s components and their roles:

| No. | Ingredient | Role |
| --- | --- | --- |
| 1 | Diphenylhydramine HCl | API (antihistamine for productive cough) |
| 2 | Ammonium chloride | API (expectorant) |
| 3 | Sodium citrate | Stabilizer (pH buffer) |
| 4 | Menthol | Flavoring agent, soothing effect |
| 5 | Syrup | Solvent, sweetener, soothing effect, preservative |

**Counseling:**

* Indication (Why the medicine is given):

Antihistamine used for productive cough, allergy and hay fever, it also acts as an expectorant to get rid of sputum.

* Administration (How to use it):

(1-5years) 2.5ml every 4 to 6 hours

(6-12years) 5ml every 4 to 6 hours

\*\*Don’t take more than 6 doses in 24hours

Drink plenty of water after administration

* Adverse effects:

Causes drowsiness (Don’t take it and drive), dizziness, headache, irritability, dry mouth, stomach upset, blurred vision

* Storage conditions:

Store in a cool dark place away from heat light and away from children, store between 20-25C°.

\*\*Avoid storage below 4℃ because it results in sugar crystallization, which affects uniformity and stability.

**About experiment:**

* Calculations:
* All weights were multiplied by 20 to modify the final volume to 100ml instead of 5ml.
* Dosage strength (w/v)= 0.280g/100ml= 0.28% of diphenylhydramine HCl
* Dosage strength (w/v) = 2.7g/100ml = 2.7% ammonium chloride

**Main label:**

**Pharmacy name**: Harvard pharmacy

**Pharmacist name**: Fairouz Zayed

**Partner name**: Dana Sadaqa

**Patient name**: Derek shepherd

**Product name**: cough syrup

**Product strength**: diphenhydramine HCl 0.28% (w/v)

**Expiration** **date**: 1 week

**Amount prepared**: 100 ml

**Use**: cough control for productive cough (antihistamine)

**Auxiliary label:**

* store in cool and dark place
* keep away from direct heat and light
* keep out of reach of children
* may cause drowsiness, don’t take it and drive

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| Doctor of pharmacy program | | Pharmacy skill laboratory (PHAR 321) | |
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| Students name: | Fairouz Zayed  Dana sadaqa | Students numbers: | 1160750  1160832 |
| Experiment name: | Magnesium carbonate mixture BPC | Experiment number: | 1.3 |

| No. | Ingredients | Quantity | Dispensed by | Checked by |
| --- | --- | --- | --- | --- |
| 1 | Light Magnesium carbonate BP | 5g | Dana & Fairouz | Dr. firas |
| 2 | Sodium bicarbonate BP | 8g | Dana & Fairouz | Dr. firas |
| 3 | Concentrated peppermint spirit | 2 drops | Dana & Fairouz | Dr. firas |
| 4 | Double strength chloroform water BP | 50ml | Dana & Fairouz | Dr. firas |
| 5 | Water | 40 ml | Dana & Fairouz | Dr. firas |

**Pharmaceutical drug in pharmacy:**

* Trade name: Magonate
* Company: Valeant
* Active pharmaceutical ingredient (s): magnesium carbonate mixture

**About product:**

Product name: magnesium carbonate mixture

Product’s components and their roles:

| No. | Ingredient | Role |
| --- | --- | --- |
| 1 | Light magnesium carbonate BP | API: antacid , magnesium supplement for magnesium deficiency |
| 2 | Sodium bicarbonate BP | Antacid |
| 3 | Concentrated peppermint spirit | Flavoring agent |
| 4 | Double strength chloroform | Solubilizing agent, preservative. |
| 5 | Water qs | Solvent |

**Counseling:**

* **Indication (Why the medicine is given):** antacid, magnesium deficiency, heart burn, stomach upset.
* **Administration (How to use it):** 10 ml 3 times a day, dilute with an equal amount of water each time, shake well before use, take with meals to reduce side effect.
* **Adverse effects**: stomach upset, diarrhea.
* **Storage conditions**: keep away from direct heat and light, keep away from children reach, use a child resistance closure and an amber bottle

**About experiment:**

* Calculations:
* 100 ml suspension was prepared instead of 1000 ml
* 2 drops of peppermint spirit were added instead of 2.5ml emulsion due to its high concentration
* Dosage strength (w/v)= 5g/100ml = 5% light magnesium carbonate

**Main label:**

**Pharmacy name**: Harvard pharmacy

**Pharmacist name**: Fairouz Zayed

**Partner name**: Dana Sadaqa

**Patient name**: Daniel Erin

**Product name**: magnesium carbonate mixture BPC

**Product strength**: light magnesium carbonate BP 5% (w/v) , sodium carbonate 8% (w/v)

**Expiration** **date**: 1 week

**Amount prepared**: 100 ml

**Use**: antacid, magnesium supplement for magnesium deficiency

**Auxiliary label:**

* store in cool and dark place
* keep away from direct heat and light
* keep out of reach of children
* dilute before use
* shake well before use

**Questions:**

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

Stir continuously and avoid rapid cooling, use citric acid as a stabilizer which prevents crystallization of sugar. And avoid storage below 4℃. Add glycerol 10%to prevent crystallization.

1. **Write down the equation of color changes in exercise 1 and calculate the amount of Fe in the preparation?**

FeSO4.7H2O 🡪 FeSO4 + 7H2O

7.32g 🡪 278.02g/mol

?? 🡪 55.845g/mol

1.47g= amount of Fe I the reaction

1. **What are the different kinds of coughing and in which case do we not give cough syrup?**

Dry cough and productive cough. We don’t use cough syrup in dry cough we use cough suppressant instead like Robitussin.

1. **What are some important pieces of advice to give to patients taking cough syrup?**

Don’t take it and drive because it causes drowsiness, and don’t misuse it for sleep induction. Don’t take with other cough or cold medications containing same API. Drink plenty of water because it causes dry mouth. Don’t store in the fridge and keep away from children heat and light.