

Chemical and physical properties of flour and their research methods



Prepared:
***student of faculty commodity
research and commercial
activities 1 courses of 4
Romanova Alina***

Briefly on flour:



Flour is a product which is obtained by grinding the powder grain cereals or legumes seeds



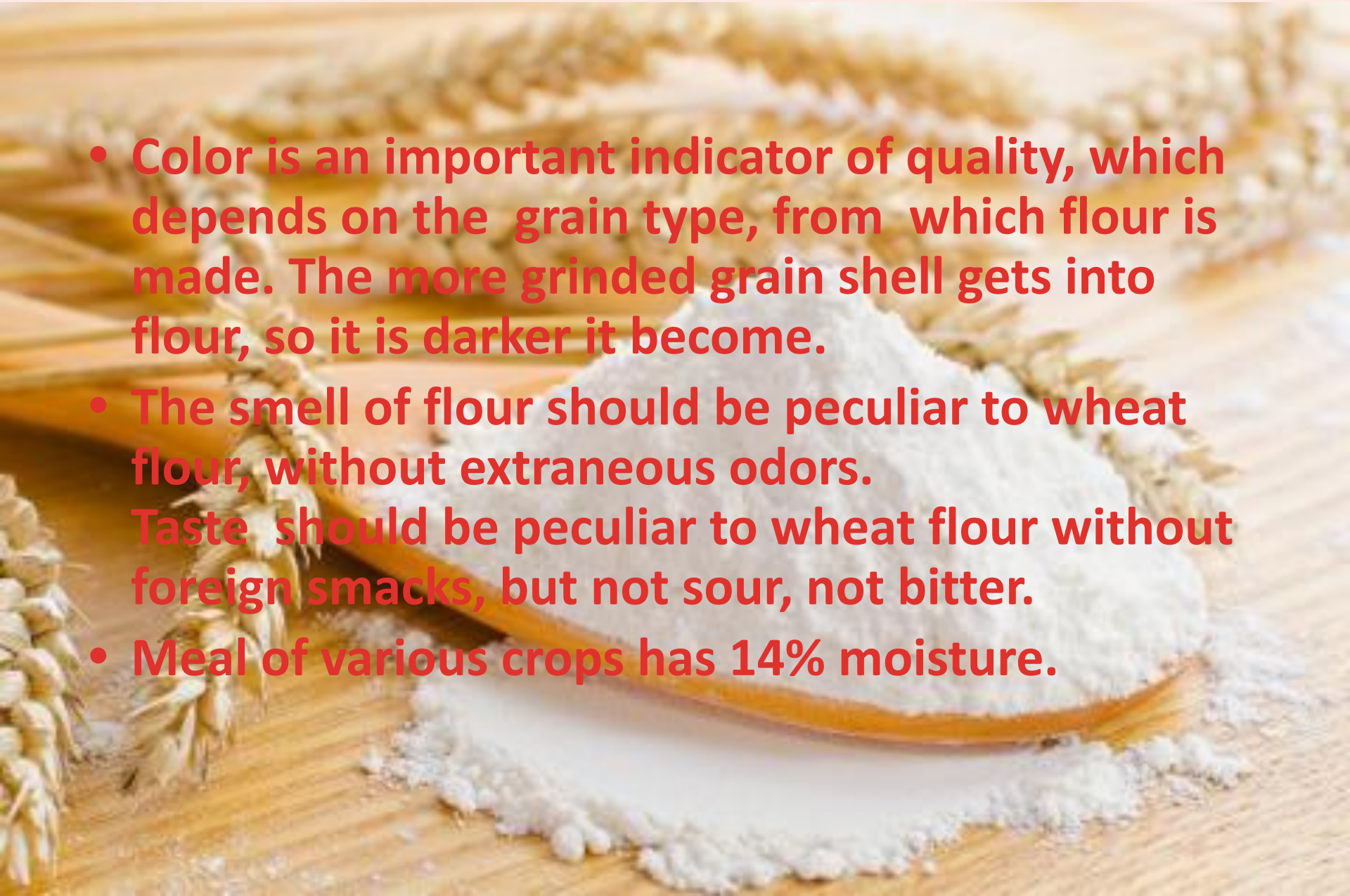
Using

The main purpose of flour is baking bread, baking pancakes, pies, while making dumplings, bakery, confectionery products (cakes, muffins, cookies), pasta, and more.



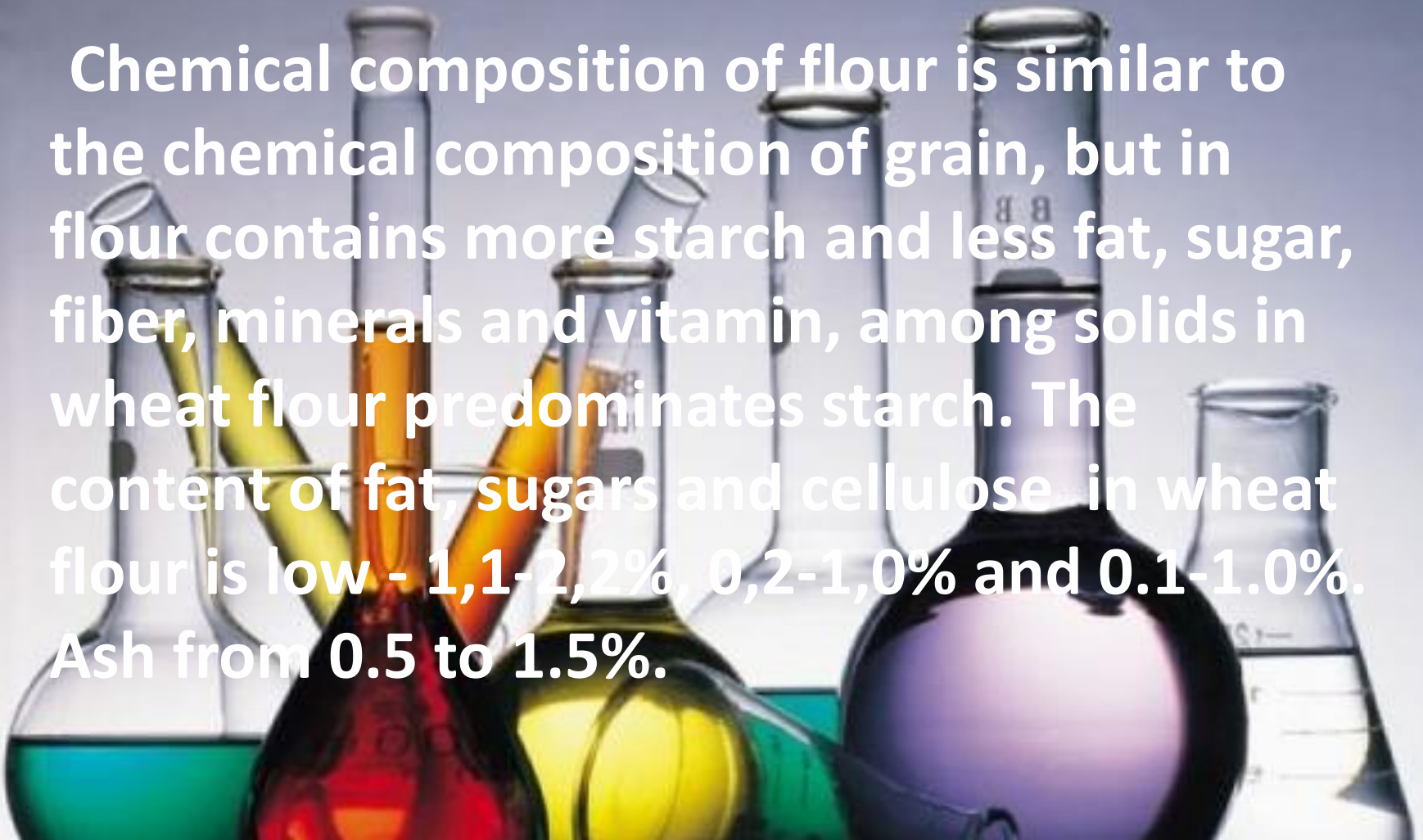
Physical properties.

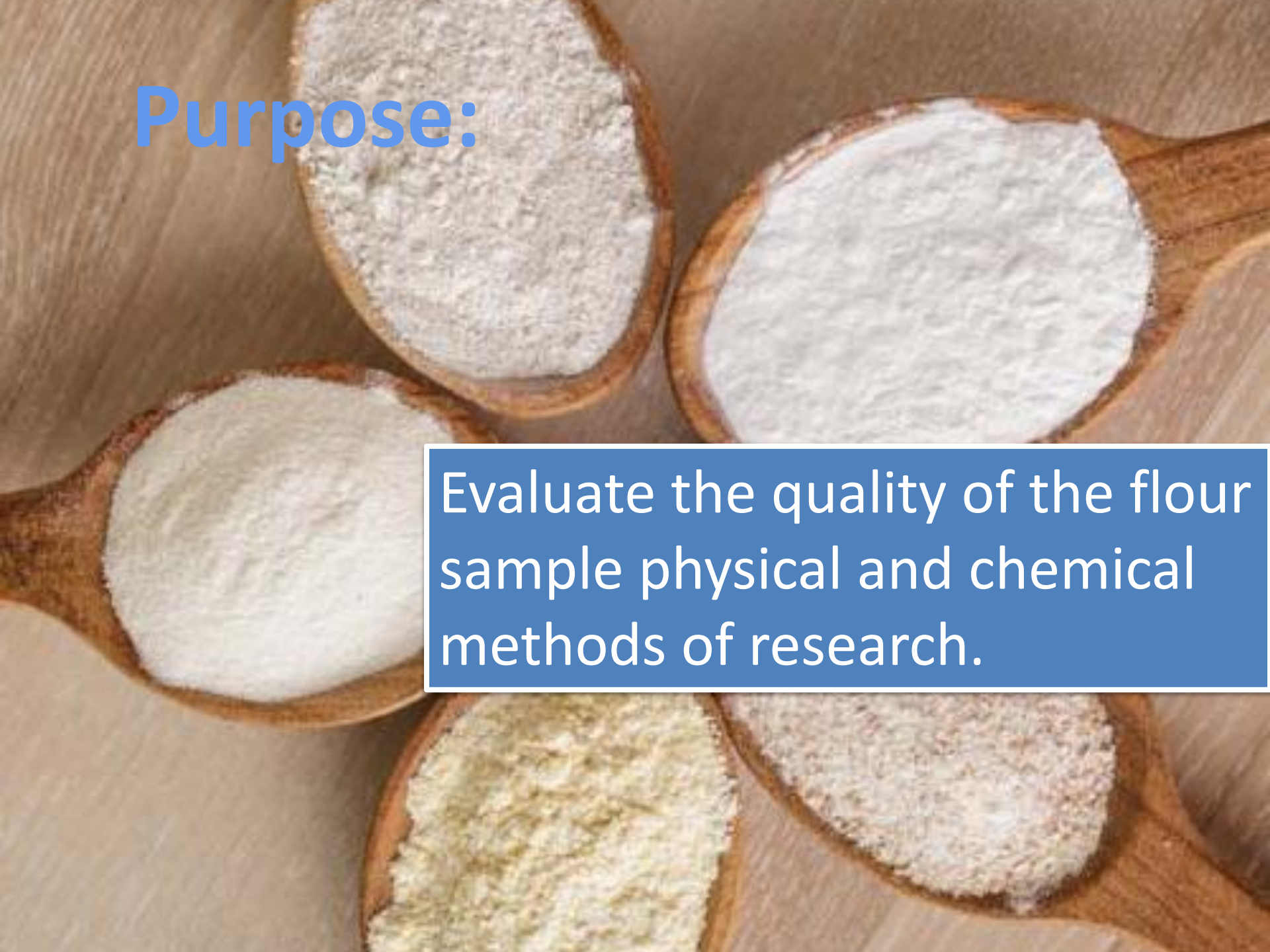
- Color is an important indicator of quality, which depends on the grain type, from which flour is made. The more grinded grain shell gets into flour, so it is darker it become.
- The smell of flour should be peculiar to wheat flour, without extraneous odors.
Taste should be peculiar to wheat flour without foreign smacks, but not sour, not bitter.
- Meal of various crops has 14% moisture.



Chemical properties

Chemical composition of flour is similar to the chemical composition of grain, but in flour contains more starch and less fat, sugar, fiber, minerals and vitamin, among solids in wheat flour predominates starch. The content of fat, sugars and cellulose in wheat flour is low - 1,1-2,2%, 0,2-1,0% and 0.1-1.0%. Ash from 0.5 to 1.5%.



The background image shows five wooden spoons arranged on a wooden surface. Each spoon contains a different type of flour. The top-left spoon has a light beige, finely milled flour. The top-right spoon has a bright white, finely milled flour. The middle-left spoon has a bright white, finely milled flour. The bottom-left spoon has a light beige, coarsely milled flour. The bottom-right spoon has a light beige, coarsely milled flour.

Purpose:

Evaluate the quality of the flour sample physical and chemical methods of research.

Materials Required

- Different types of flour
 - fluorymet
 - pH-meter
 - distilled water
 - conical flask
 - 3% phenolphthalein - solution
 - sodium hydroxide solution concentration of 0.1 mol / dm³.
 - Scales laboratory purpose
 - Burettes
 - Droppers
 - Pipette
- 
- The image shows six petri dishes arranged in a row, each containing a different type of flour. Each dish is labeled with a handwritten tag in Ukrainian. The tags are as follows:
- Зразок 1: Пшеничне борошно (Wheat flour)
 - Зразок 2: Пшеничне борошно (Wheat flour)
 - Зразок 3: Речане борошно (Rye flour)
 - Зразок 4: Кукурудзяне борошно (Corn flour)
 - Зразок 5: Картопляне борошно (Potato flour)
 - Зразок 6: Картопляне борошно (Potato flour)



1. Wheat flour "Наша марка" Kharkiv
2. Wheat flour "Добрий господар" Bila Tserkva
3. Buckwheat flour "Подільський край" Vinnitsa

4. Corn flour "Сто пудов" Kharkiv
5. Potato flour "Крохмаль" Veprin
6. potato flour "Добрий господар" Bila Tserkva



Experiment 1:

luminescent analysis of flour

Fluorescent analysis helps to identify qualitative and quantitative flour composition

Results:

Wheat flour (samples 1 and 2) – sky-blue

Buckwheat flour (Sample 3) – blue

Corn flour (sample 4) - brown

Potato flour (samples 5 and 6) - gray-brown



Experiment 2: Determination of impurities chalk, gypsum and lime impurities in flour

Check the pH using pH-meter



Sample:

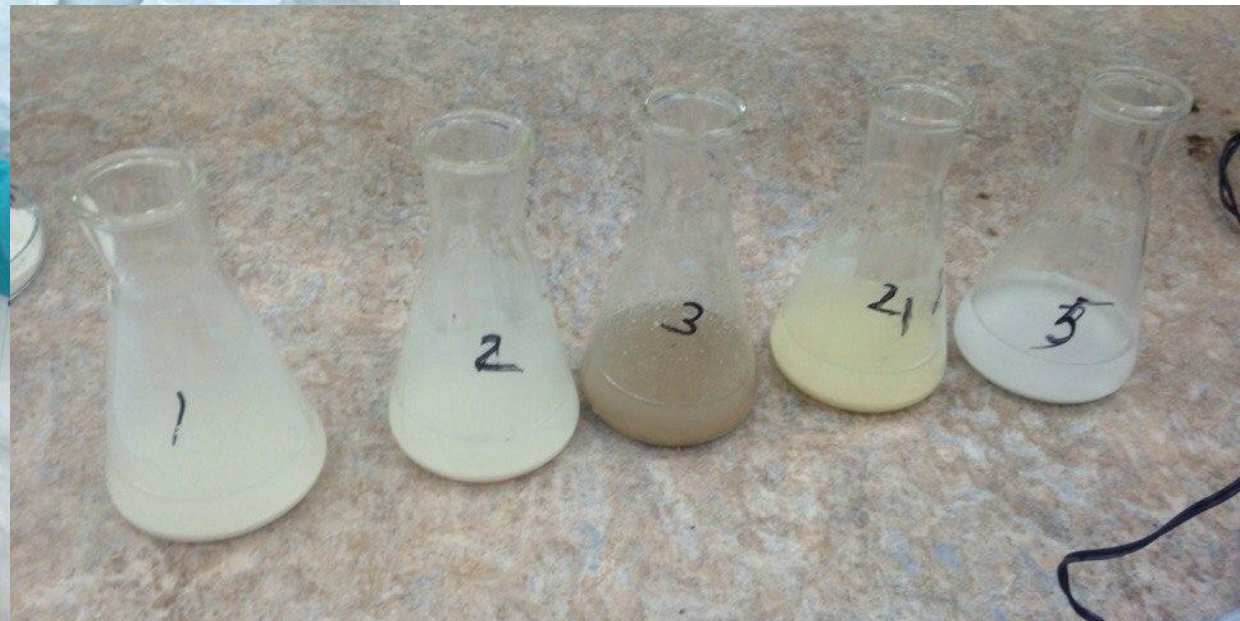
1. $\text{pH}=5,72$
2. $\text{pH}=5,84$
3. $\text{pH}=6,12$
4. $\text{pH}=6,17$
5. $\text{pH}=6,76$
6. $\text{pH}=6,22$

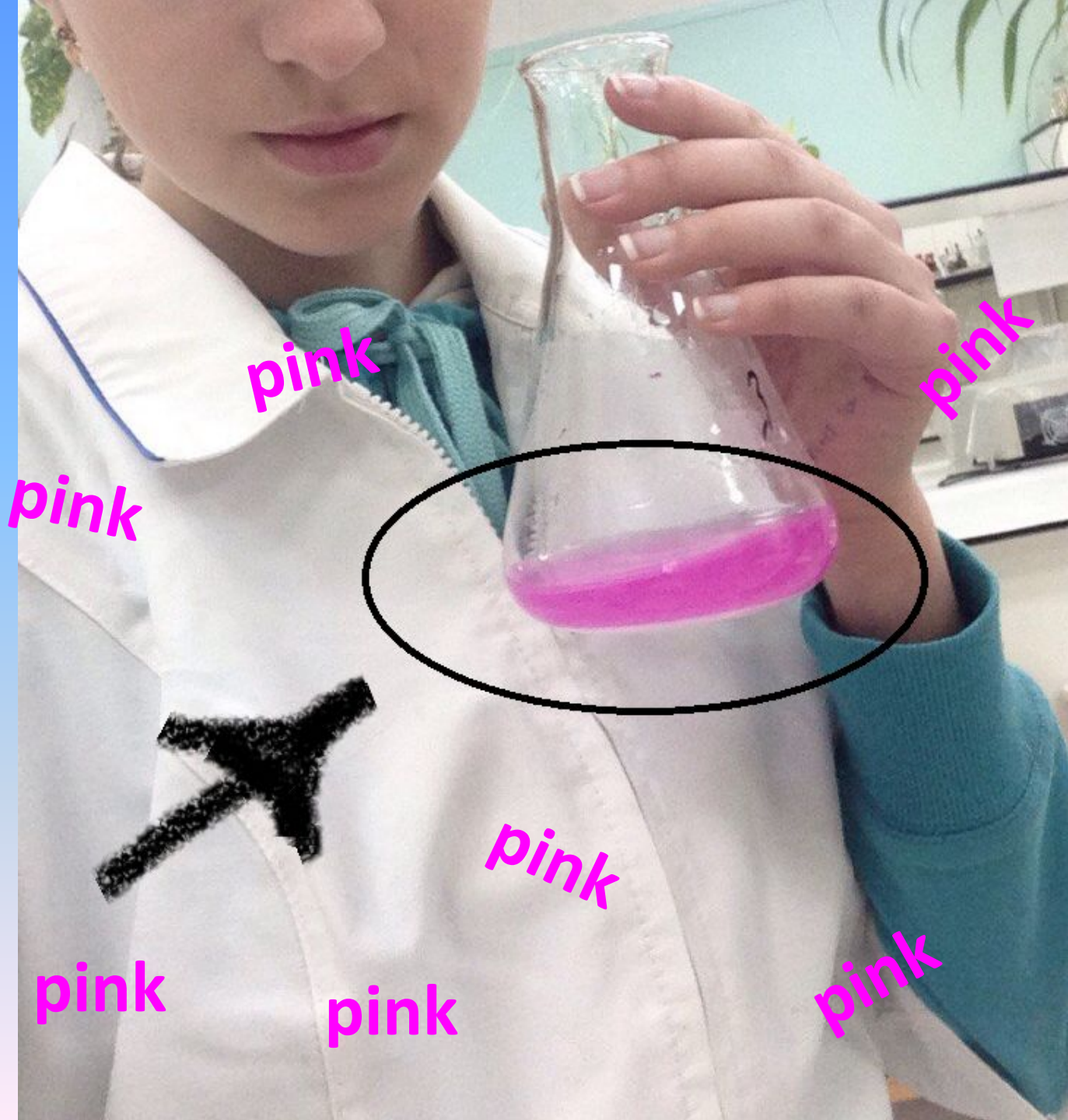
Experiment 3:

Method of determining the acidity of flour

The main purpose of this method is titration of all acids reactants in flour by sodium hydroxide

5 grams of flour
+
50 cm³ distilled
water





RESULTS

Acidity :

1. $5,2^{\circ}$
2. $4,2^{\circ}$
3. $7,6^{\circ}$
4. $9,6^{\circ}$
5. $0,8^{\circ}$
6. 1°



Conclusions:

- Acidity of potato and corn flour meet the standards
- Acidity of buckwheat flour is too high and does not meet the standards.
- Acidity of wheat flour does not meet the standards of both top and second grade.

Thank for your attention

