

# STARCH AND MODIFIED STARCH



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**The aim of my research work is** to explain the presence of modified starch in food in which it shouldn't.

**Tasks of my research work are:**

- find the theoretical material of starch and modified starch;
- analyze the label on the content of modified starch products;
- check the products, which often have the starch;
- prepare the starch at home.



# STARCH

Starch is a polymer based on glucose. Starch is a carbohydrate consisting of a large number of glucose. This polysaccharide is produced by all green plants as an energy store. It is the most common carbohydrate in the human diet and it is in potatoes, wheat, corn, and rice.



Pure starch is a white, tasteless and odorless powder that is insoluble in cold water or alcohol. It was invented by George Washington Carver. It consists of two types of molecules: the linear and helical amylose and the branched amylopectin. Depending on the plant, starch generally contains 20 to 25% amylose and 75 to 80% amylopectin.



# Name

The word “starch” is derived from Middle English sterchen, meaning to stiffen.



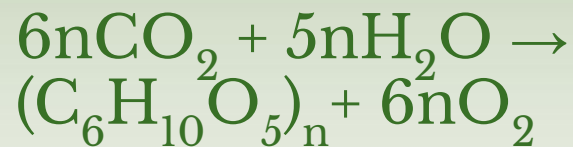
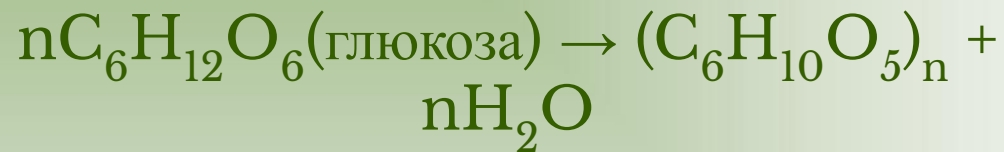
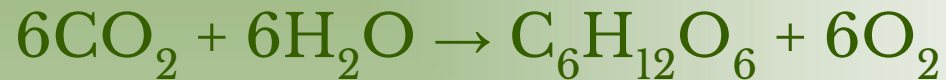
# History

Wheat starch paste was used in Ancient Egypt possibly to glue papyrus (first described in History of Pliny the Elder around AD 77-79). Romans used it in cosmetic creams, to powder the hair and to thicken sauces. Persians and Indians used it to make wheat halva. In China starch used in paper production, from 700 AD.



# Biosynthesis

Carbon dioxide and water are converted into starch and oxygen



# "Regulation of starch"

1. Starches combine well with each other and combine badly with other products.
2. It is best to combine starches with a salad of raw vegetables.
3. Starches are digested better when the body is enough vitamin B.



# Products with the highest starch content in%

rice flour	79%
white rice	78%
whole rice	75%
spaghetti	75%
cornflakes	74%
wheat flour	72%
barley flour	72%
pross	69%
popcorn	68%
fresh bread	66%
corn flour	65%
oat	61%
wheat	60%





# Food, in which the starch is thermally processed, too hard to digest and derive

Confectionery (licorice candy, liqueur chocolates)

Pastries (pastry cream filling, icing)

Meat and fish products

Convenience foods for quick preparation

Dairy products (yogurt, desserts)

Instant desserts

Canned goods

Cracker

Glazed nuts

Noodles

Drinks

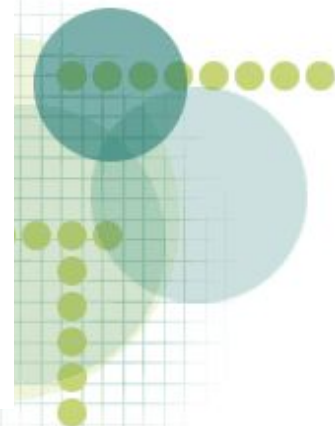
Shaped Snacks

Ice cream

Frozen Food

Fat substitutes

Soluble soups, dry soups



# Analysis of the labels

## ■ Products that contain modified starches:

- Ketchup «Calve»
- «Maggi»
- Mayonnaise Maheev "
- «Knor» dressing for chicken
- «Aktual" dairy product
- «Rolton" meat

## ■ Products that contain corn starch:

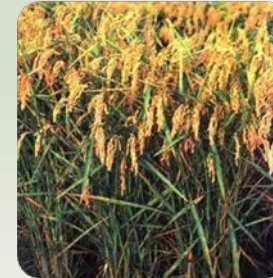
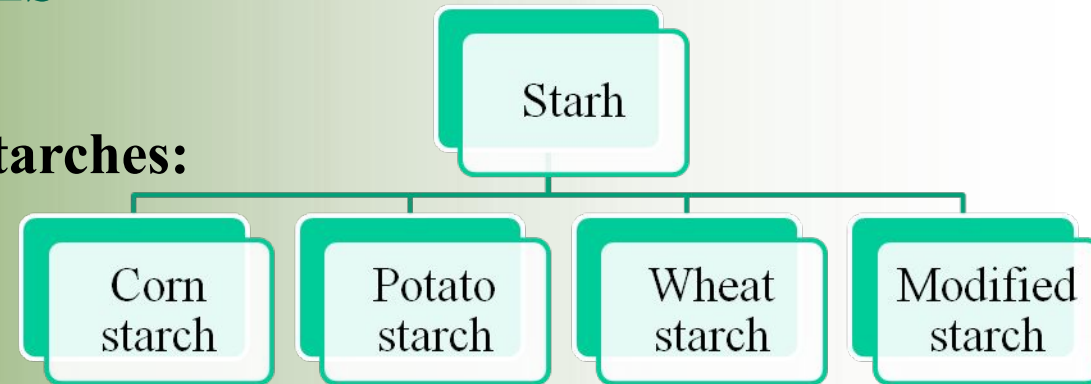
- «Maggi»

## ■ Foods that contain wheat starch:

- Chips «Pringles»
- Bread Waffle "Elizoveta"

## ■ Products that contain potato starch:

- «Pripravych" "Soup Alphabet"
- «Pripravych" "Star Soup"



# Experiment № 1

## "Preparation of starch at home"

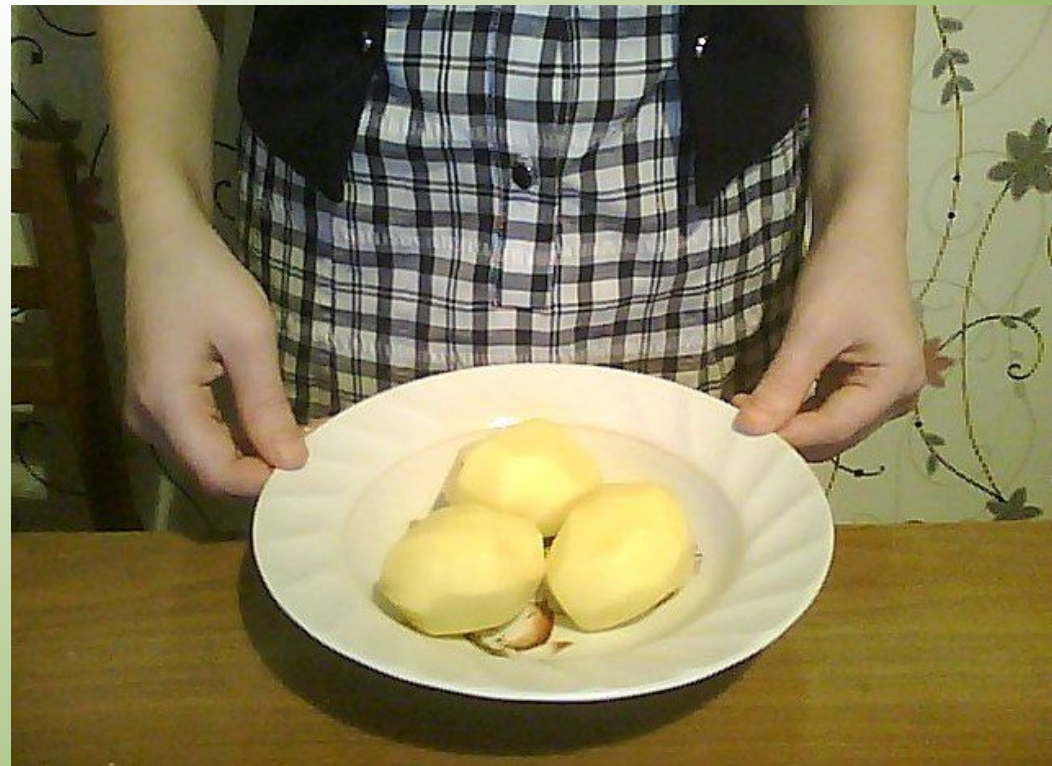


1. Take 3 potatoes.





2. Clean and peel them.





3. Grate to obtain "mush"

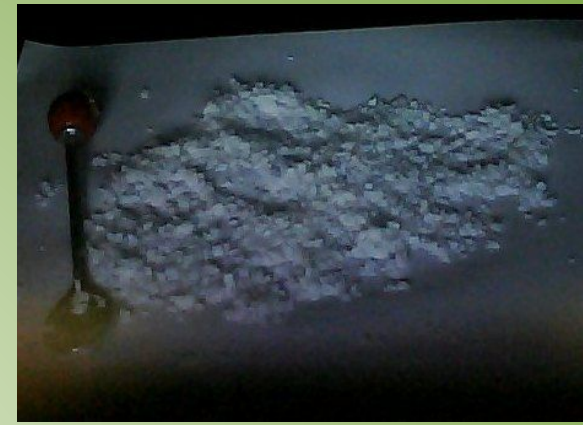




4. Then it should be washed in the water. To get a lot to overcome, the water filters.



5. Repeat several times until the water in the glass will be clear. Ready starch should be dried.



# Experiment № 2

## "Identification of starch in foods"

In rice starch contains 72-78%, so it will turn a darker color.

Sausage contains modified starch. In the modified starch is the same reaction as that of natural gas.



In the flour contains large amounts of starch and, consequently, in the bread.



Potatoes - is best known source of starch.



More starch in unripe apples, since it is produced only in green parts of plants..





# Experiment № 3

## "Preparation of starch glue"



1. Tablespoon of starch (flour) should dissolve in hot water.

2. Cool to get a lot.



The resulting application, glued starch paste



# Experiment № 4

If to check all yogurts at the grocery store you will find modified corn starch. It sounds unappetizing but it is better not to eat them.



## Ingredients:

Cultured grade A milk and cream, sugar, fructose syrup, strawberry puree, contains less than 1% of fructose, corn starch, modified corn starch, Kosher gelatin, natural flavor, malic acid, carmine and annatto extract (for color). Contains active yogurt cultures.

# CONCLUSION

Modified starch does not cause severe harm to our health because it is a natural starch, which has one or more characteristics changed. It is used as a thickener. But in the meat industry added modified starch, because the market is likely low-grade meat sausages. Starch 3-3.5 times cheaper than beef and 2 times cheaper than soy isolate. Natural starch - an important component of our food, it must be eaten. But how? For the normal digestion of food need more vitamins and minerals, because their actions in the body are interconnected. Without this condition, the starch ferments poisoning us. Almost every day expectorated mucus amyloid, which fills our body and causes endless colds, and colds. As well as starchy foods should be 20% of the food, rather than 80-90%, as it is now!

