

# Contact Information

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## Timetable

October 1 to January 15 - Daily Notes & Ideas

October 23 to February 15 - Research

December 20 to February 20 - Make Google Slides

December 20 to February 20 - Upload Research on CYSF Platform

February 20 to February 27 - Do Tri-Fold

February 20 to February 27 - Que Cards

February 27 to March 1 - Design and share what I have learned on

February 28 to March 2 - Finishing Touches

March 4 - Project due

October 23, 2025 Background Research [1]

- Allura Red is a food dye also known as Red 40
- It is used in food, drinks, medications, cosmetics and play dough
- Mostly used in food
- Has harmful chemicals in it
- Can cause health effects

## Question

What are the health affects of Allura Red?

## Purpose

The purpose of my project is to inform people about the health affects of Allura Red.

## Thesis

Allura Red can cause a variety of health effects which can affect a person both physically and mentally.

# Topic

How I came up with my project?

I came up with my project one day after school when my sister was talking about how Allura Red is in many foods and is harmful but not many people knew about it.

Why I chose it?

I chose this project because it interested me the most. I also chose it because I thought it would be informative since not many people know about it.

# Daily Notes & Ideas

October 7, 2025: Why is Allura red mostly in junk food? Can we stop making things red? Beets instead? Different way without chemicals? Extract harmful chemicals?

October 23: Alternatives? When?

November 16: Can it be absorbed through skin to harm you? Only digested to harm?

November 30: Can it harm plants and animals? Would animals get sick like humans? What about plants?

December 27: Can it be absorbed through skin when used in cosmetics? Can it cause health effects when and if it is absorbed?

January 31: Why do they put benzene in Red 40? We should stop promoting Red food. Use alternatives instead. Is benzene a by-product? Why hasn't it been banned in Canada? Encourage alternatives. Check ingredients before consuming? What are reaction times of health effects caused by Allura Red? It can be absorbed through skin.

Feb. 11: Why is Allura Red still FDA approved? Do side effects of Allura Red occur immediately? Could Allura Red cause ADHD or other problems similar? Does it worsen behavioural systems only in children? Can it affect growth development? Can it affect brain development?

# To-Do

- ↑ - Finish Slideshow - Myrines, DNA Damage, JBD, Conclusion, What's Next
- ↓ - Input info on platform
- Proofread
- Trifold
- Que cards
- Video
- Research Alternatives ✓

Project Due: March 9

# Research

Nov. 16, 2025

What is Allura Red? [2]

- Allura Red is a dye with many uses
- It can cause multiple health effects
- It can be found in soft drinks, candies, ice cream, bakery products and much more
- Allura Red can affect humans and animals
- It can increase hyperactivity in children
- It can enter the bloodstream during its transport and metabolism process
- In many countries it has been banned.
- JECFA has established an estimated intake of Allura Red without harming you per day
- Their ADI is 0-7 mg a day in food and beverage products
- Allura red can be used in food, drugs and cosmetics

Dec. 7, 2025

Health Effects [3]

- Some side effects could be
  - Hyperactivity and ADHD in children
  - Allergic Reactions
  - Possible links to cancer
- Hyperactivity and ADHD in children
  - Kids who have ADHD can be associated with behavioural changes and hyperactivity
  - It doesn't cause ADHD but kids who have ADHD may be sensitive to the dye,

## Allergic Reactions

- If you're sensitive to Allura Red your body might release the chemical histamine which plays a role in allergy symptoms
- You could experience
  - Headaches
  - Hives and asthma
  - Skin irritation
  - Sneezing

# Research

- Watery Eyes

• Possible links to cancer

• For a long time Allura Red was thought to be a healthier alternative compared to other dyes which have strong links to cancer.

• Allura Red has links of its own though

• It has p-Cresidine which is thought to be a cancer causing substance

carcinogen:

• Also has traces of benzene known as a carcinogen

cancer causing

• Benzene isn't added it is created as a byproduct through the process

substance

of making it.

Dec 7, 2025

Alternative Names [3]

• Red 40

• Red 40 Lake

• FD&C Red No. 40

• FD&C Red No. 40 Aluminum Lake

Commonly include Allura Red [3] & [5]

Foods: [3]

• Candy and gum

• Cakes and frosting

• Cereals

• Chips and salty snack foods

• Energy drinks

• Gelatins

• Ice cream

• Pastries

• Popsicles

• Protein powders

• Pudding

• Soda

• Sports drinks

• Yogurt

• Sip

• Energy

[5]

• beverages

• Cereals

• gelatins

• candy

• puddings

• dairy products

• vitamins

• pain relievers

Dec 25, 2025

### Health Effects [4]

- Can cause early colorectal cancer
- (EOCRC) early onset colorectal cancer has been rising for 40 years

- diets high in red meats, processed meats and saturated fats may boost the risk of having colorectal cancer (CRC)

carcinogen: Red 40 is often in high fat food which may (CRC)

### Allura Red [4]

the form of cancer Ex. Used in processed foods

- beverages
- frozen treats
- powder mixes
- gelatin products
- candies

- icing
- jellies
- spiro
- dipping
- sour

hypersensitivity reactions =

baked goods

### Health Effects [5]

• Red 40 linked to migraines and worsening symptoms of ADHD in immune kids

• Some research suggests Allura Red may cause hypersensitivity reactions

• Symptoms are not consistent or well-defined

• In artificial food colouring the chemicals in the dye break down into extremely small molecules

• Sometimes, the body sees the molecules as a threat

• The response of the body is launching an attack that causes inflammation, autoimmunity (when your immune system attacks your

Hilroy

body's healthy cells and tissues seeing them as foreign threats causing inflammation and damage in affected areas) or neurobehavioural symptoms (affects a person's thoughts or actions)

Jan. 7, 2026

Health Affects [5]

### Migraines

- people who have migraines have triggers
- Food dyes like Red 40 have been linked to migraines
- It may be a trigger for some people
- It is not known why food colouring triggers headaches and migraines

• Many people who get migraines have a sensitivity or intolerance to red and yellow dyes

### ADHD

- Could be linked to ADHD
- Research shows that kids with ADHD have improved symptoms when Red 40 is reduced or eliminated.
- Research suggests that kids with immune hypersensitivity to the chemicals in Red 40 could cause the behavioural systems that some children with ADHD experience when consuming dyes.

### Cancer

- Red 40 has not been linked to a specific type of cancer.
- It contains a human carcinogen called benzidine
- It is not clear how much exposure of the dye could potentially

In vitro = Increase the risk of cancer

test tube

Jan. 9, 2026

Health Effects [4]

In vivo =

Colon Cancer & Inflammation

person /

• Red 40 cause DNA damage

living thing

• Red 40 causes a dose-dependent increase (where the response is proportional to the amount of substance given) in the DNA damage

In vitro

• Red 40 doesn't significantly stop cell growth and isn't toxic to living cells under these experimental conditions

as the cell growth rate for Red.40 treated cells and non-treated cells are the same in comparison

Jan. 11, 2026 Health Effects [4]

In vivo/In mice

tail olive

momentz

a technique

to check

for DNA

damage

- Red40 causes DNA damage in the colon
- One group given the ADI
- Other given twice the ADI
- Both have damage in the colon
- The group give more has more DNA damage

Jan. 30, 2026

Mice

HFD -

high-fat

diet

LFD - Low

fat diet

- food intake was higher in the LFD group
- Weight gain higher in the HFD group
- After HFD for 10 months there was an increase in the spleen liver and kidney
- For LFD liver was  $1.34 \pm 0.12$  g kidney was  $0.34 \pm 0.03$  g and spleen  $0.68 \pm 0.06$

- For HFD liver was  $1.25 \pm 0.35$  g kidney was  $0.09 \pm 0.09$  and spleen was  $0.04 \pm 0.04$

• After adding Red.40 to the diets the weight of the liver, kidney and spleen all went up even more

microbiome =

the entire

community

of microorg-

anisms that

live in the

human body

- LFD - liver =  $1.46 \pm 0.13$  g, kidney =  $0.34 \pm 0.07$ , spleen  $0.09 \pm 0.02$
- HFD - liver =  $1.27 \pm 0.27$  g kidney =  $0.34 \pm 0.06$  g and spleen =  $0.08 \pm 0.03$
- With a HFD and Red.40 the weight goes up more than an LFD and Red.40
- Western style HFD's with Red.40 have a potential impact of colorectal cancer and early-onset colorectal cancer (EOCRC)

Jan. 31, 2026

Health Effects [6]

Impact's childrens behaviour

• Hyperactivity in toddlers

• Behavioural outcomes

Hypersensitivity

• Allergic reactions like inflammation can lead to neurobehavioral issues

Cancer

• Red40 contains benzene - a cancer causing substance

Filter

Feb. 8, 2026

### Health Affects [7]

• One of the 9 approved food colours by the FDA

Feb. 12, 2026

• Find it by reading ingredients

Names

E129

CI Food Red 17

INS no. 129

• Research in humans and animals show that Allura Red has links to ADHD symptoms and other neurobehavioural problems

• Research shows that some children are more sensitive to it

• It can cause behavioural problems even if the child doesn't have ADHD  
Hyperactivity Symptoms

• Constant fidgeting

• Unable to concentrate

• Unable to sit still

• Excessive movement

• Inability to wait

• Interrupting conversations

• Little or no sense of danger

• In adults it can be restlessness and excessive talking

• Research indicates that the more exposure they have the more hyperactive they are

### Health Effects [8]

Feb. 12, 2026

• The amount of food dye consumed has gone up in the past 50 years

• At the same time there has been a large rise in behavioural problems like aggression, ADD and ADHD

• They can be absorbed through skin from medicine and cosmetics

Feb. 14, 2026

### IBD Health Effect [9]

• Long-term consumption of Allura Red can cause IBD

• Continuous exposure to Allura Red harms gut health and promotes

inflammation

- Foods Allura Red are in often attract children
- Disrupts the function of the gut barrier which produces a chemical causing the microorganisms of the gut to change increased the likelihood of colitis

colitis =

inflammation

of colon

• Use of food dye has increased significantly

Feb. 15, 2026

Health Effects [10]

IBD

• diet plays an important role on IBD

chow diet

for mice

wheat/corn,

soybean

- Mice exposed to Allura Red earlier were more likely to develop colitis
- 3 groups - standard diet, daily Allura Red diet & Once a week Allura Red
- Findings were that intermittent Allura Red exposure (similar to human exposure) did not increase likelihood of colitis

• Mice that consumed Allura Red daily developed mild colitis

• Early exposure to Allura Red caused low grade colonic inflammation

Feb. 18, 2026

Alternatives [11] [12] [13] [14]

• vegetables [11]

• fruits

• flowers

[12]

• Beets

• Onion skins red

→ Add different flavours to your <sup>own</sup> (cook, my thought)

Feb 19 [14]

• radishes

• sweet potatoes purple

• Red cabbage

• black carrots

• marachino cherries with radish extract gave a attractive red colour

• Radish and potato extracts have colour characteristics that are close to Allura Red [13]

• Beet juice beverages, soups

• paprika extract - flavourful option

History

- Annatto - from the seeds of a tropical tree - cheese and yogurt
- Pomegranate Juice - dressing
- Hibiscus powder - tea and confectionary - flowers

# Resources

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