

FRUIT AND VEGETABLE CARD GAMES

Target age group: all ages

Purpose: to review or learn information about the nutritional content of fruits and vegetables, and about their botanical classification.

Materials needed: copies of these pattern pages printed onto heavy card stock paper, scissors

NOTE: If you are playing with a large group and need to make more than one copy of the cards, tag each set of cards in some way so that if the sets get mixed up they can be easily sorted again. For example, I made 6 complete sets of cards for my class and put a tiny colored dot on one corner of each card in a set. So I had a red dot set, a blue dot set, a green dot set, etc. If I found cards on the floor it was obvious which set they belonged to.

Source of info on cards: The nutritional information came from a website called nutritiondata.self.com. I rounded off numbers and averaged cooked/raw numbers on some of the foods. If a food was more often consumed raw, I used the raw numbers (e.g. apple) and if the food is usually consumed cooked I used the cooked numbers (e.g. potato). For those that are eaten both ways, I took the average. The most surprising difference I found was in the green cabbage, where the raw numbers were all pretty low and the cooked numbers were extremely high, as if cooking the cabbage released many nutrients.

PLEASE NOTE that this nutritional data does not include phytonutrients! Since phytonutrients correspond approximately to color (carotene is orange, anthocyanin is blue) the colors of the plants can be used to sort them according to their phyto content. I found that "NaturallyHealthyConcepts.com" makes a very attractive color chart showing foods in their color groups (red, yellow, green, etc) and giving the names of the phytochemicals found in them, as well as their benefits to our health.

Giving background information: I did a lecture before we played with the cards and went over basic plant anatomy, including seed anatomy. We learned that in botanical terms, anything with a seed is a fruit. There are a number of types of fruits, and their classification can often be very confusing. I focused on the definition of a berry, and didn't worry quite so much about the others (like aggregate or multiple).

A berry has three layers: 1) an outer protective layer, 2) a middle "fleshy" area, and 3) an inner area with seeds that are held in place by strings or goo. These layers can be seen very well in a cantaloupe. (Berries like cantaloupe with hard outer layers have a special name: "pepo.") Each layer can have variations. Some berries, like grapes, have a very thin middle layer (the sweet part under the skin) and a very large seed area. The outer layer can be as thin as an apple skin or as thick as a watermelon rind. Using this definition of a berry, strawberries are not berries, and neither are raspberries or blackberries.

I supplemented my fruit lecture with a dissection of some snap peas, which are technically fruits since they have seeds. Peas and beans are legume fruits. We looked carefully at the individually peas and saw how they are attached to the pod by a thin stalk. The stalk is the rough equivalent of an umbilical cord, attaching the baby (here, the seed) to the mother (here, the flower's matured ovary). Does a seed have a navel (belly button), then? Yes, it is called the hilum. We also opened mature bean seeds and found the baby plant (tiny seed leaves) waiting inside.

Of course, tasting is another great activity. I brought in some exotic fruits that most of the students had never heard of and we had fun tasting them.

The cards can be used to play quite an assortment of games. For my middle school group, I tapped into their knowledge of card games they'd played and let them choose a format and think how to adapt it to these particular cards. This worked very well. They often came up with ideas I had not thought about. I always tell my students that it doesn't really matter what the rules are as long as everyone agrees to them. I'd have two groups playing the same format but slightly different versions. As long as everyone in a group is playing by the same rules, it's fair.

FOR ALL THESE GAMES, BEAR IN MIND THAT THE GOAL IS TO HAVE THE PLAYERS READ THE CARDS AS MUCH AS POSSIBLE, NOT TO HAVE A PERFECT CARD GAME. If things don't go quite right, don't worry about it. They are learning!

NOTE that "vitamin D" can't be used as a criteria in any game. Fruits and vegetables don't have any vitamin D.

Simple sorting activities

You can take time to simply read the cards and sort them into piles. You might want to put all the berries into a pile, for example. Choose sorting categories that suit the age and ability of your students.

"Scavenger Hunt"

Choose a few things to search for, such as "food with the highest mineral content," or "fruit with the highest sugar content," or "fruit with the highest fat content." It's up to you what else you want to search for. Have a list prepared ahead of time. If your students can't read well, you might want to choose features to look for in the pictures such as largest pit or smallest seeds.

"War"

When this game is played with regular playing cards, two players divide the deck, then take turns laying out cards one at a time. Players are not allowed to look at their cards, they just pull one off the top of their stack. The player that turns over the card with the highest number wins both cards. The game keeps going like this until one player has earned all the cards. (In reality, the game keeps going, and going, and going until the players have to go do other things or just get tired of playing.)

The adaptation you will need to make for these food cards is to choose which data you are warring over. Most sugar? Least sugar? Most vitamins? Choose what you want to emphasize.

If there is a tie, players just put down another card in addition to the first one, and the winner will take all of those cards. If it is a tie again, put down yet another card. At some point, there will be a winner.

You can play this game with three players, also, with the winner taking all three cards.

You might want to consider limiting the length of the game by having players start with only 10 cards. It might be better to play several shorter games than one long one. We also limited the length of the game by having the "won" cards set aside in a keeper pile, instead of putting them back into the players' deck. In this way, the players would run out of war cards in ten turns, then just count the number of cards the won in order to determine the winner of the game.

"Go Fish"

Play with standard "Go Fish" format, where players try to collect sets of cards, but allow the players to determine what matches. They might say, "Do you have a fruit with a high vitamin C content?" or "Do you have a food that is a leaf?" or "Do you have a pepo?" You can't use "fruit" as a category as that is too broad; you need to be more specific. It is up to you whether to allow "berry" to be a category on its own or whether to require the use of the most specific word given, such as pepo or aggregate.

You can have players start with 3, 4 or 5 cards. More cards will make a longer game.

"Uno"

Deal 5 cards to each player. Place the remaining deck face down and turn over the top card. If player 1 can find a way to match one of their cards to that card, they may place it on top. If player 1 has no match, he draws a card from the deck. Play continues this way until someone runs out of cards. You can choose whether to require players to say a particular word when they have only one card in their hand (real "Uno" rules). You don't have to use this rule, just make sure all players know what to do before starting.

You will need to make rules about matching vitamins and minerals. Since many have similar nutritional profiles, some matches would be too easy, such as matching low protein with low protein. My group decided to require half of the vitamins to match (3 out of 6) in order to call it a match. That seemed to work well. We also decided to group together protein/fiber/fat and require matches to be identical on all three of those. Sugar ran by itself. We made minerals be an exact match, also. Color might be too easy, but if you are playing with younger kids it might be helpful to include color. The botanical categories are also very good for matching, although "fruit" can't be used as it is too general and will produce too many matches.

The goal is to get rid of all your cards. The first player to do so wins the game.

"Spot It"

This is similar to "Uno" except that you have all players looking at that first turned over card, trying to find a match to it in their own cards. Once someone has placed a matched card on top of it, everyone races to find a match to that card. (An fyi if you are playing with students of various ages/abilities: This game favors students who can read quickly and have good visual discrimination. Players must be well matched as far as reading ability.) The advantage of this game, however, is that everyone is actively involved all the time.

AVOCADO

Fruit (berry)



VITAMINS:

A: low
B: med
C: med
D: 0
E: low
K: high

MINERALS:

K, Cu, Mg, Mn, Fe
FIBER: high
FAT: high
PROTEIN: low
SUGAR: 1g

KIWI

Fruit (berry)



VITAMINS:

A: low
B: low
C: high
D: 0
E: med
K: high

MINERALS:

K, Cu, Mg, Mn, Cu
FIBER: med
FAT: low
PROTEIN: low
SUGAR: 8g

APPLE (GREEN)

Fruit (pome)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: low

MINERALS:

low
FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 15g

APPLE (YELLOW)

Fruit (pome)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: low

MINERALS:

low
FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 15g

APPLE (RED)

Fruit (pome)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: low

MINERALS:

low
FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 15g

BANANA

Fruit (berry)



VITAMINS:

A: low
B: med
C: med
D: 0
E: low
K: low

MINERALS:

Mn, K, Mg, Cu, Fe
FIBER: med
FAT: low
PROTEIN: low
SUGAR: 25g

PEAR (YELLOW)

Fruit (pome)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: low

MINERALS:

low
FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 15g

PEAR (RED)

Fruit (pome)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: low

MINERALS:

low
FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 15g

CHERRY

Fruit (drupe)



VITAMINS:

A: low
B: low
C: med
D: 0
E: 0
K: low

MINERALS:

K
FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 17g/cup

PEACH

Fruit (drupe)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: low

MINERALS:

K

FIBER: low
FAT: low
PROTEIN: low
SUGAR: 15g

APRICOT

Fruit (drupe)



VITAMINS:

A: high
B: low
C: med
D: 0
E: low
K: low

MINERALS:

K, Cu, Mn

FIBER: med
FAT: low
PROTEIN: low
SUGAR: 15g/cup

PLUM

Fruit (drupe)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: med

MINERALS:

K, Cu

FIBER: low
FAT: low
PROTEIN: low
SUGAR: 15g/cup

ORANGE

Fruit (berry; hesperidium)



VITAMINS:

A: low
B: thiamin, folate
C: high
D: 0
E: low
K: 0

MINERALS:

K, Ca

FIBER: med
FAT: low
PROTEIN: low
SUGAR: 15g/cup

LEMON

Fruit (berry; hesperidium)



VITAMINS:

A: low
B: B6, folate
C: high
D: 0
E: low
K: 0

MINERALS:

K, Fe, Ca

FIBER: med
FAT: low
PROTEIN: low
SUGAR: 5g/cup

LIME

Fruit (berry; hesperidium)



VITAMINS:

A: low
B: low
C: med
D: 0
E: low
K: low

MINERALS:

low

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 5g/cup

GRAPEFRUIT

Fruit (berry; hesperidium)



VITAMINS:

A: med
B: low
C: high
D: 0
E: low
K: 0

MINERALS:

K, Ca

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 15g/cup

GRAPES (GREEN)

Fruit (berry)



VITAMINS:

A: low
B: low
C: med
D: 0
E: low
K: med

MINERALS:

K

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 25g/cup

GRAPES (BLACK)

Fruit (berry)



VITAMINS:

A: low
B: low
C: med
D: 0
E: low
K: med

MINERALS:

K

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 25g/cup

PINEAPPLE

Fruit (multiple; fusing of berries)



VITAMINS:

A: low
B: B6, low
C: high
D: 0
E: low
K: low

MINERALS:

Mn (lots)

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 15g/cup

MANGO

Fruit (drupe)



VITAMINS:

A: med
B: B6, low
C: med
D: 0
E: low
K: low

MINERALS:

K, Cu

FIBER: med
FAT: low
PROTEIN: low
SUGAR: 25g/cup

PAPAYA

Fruit (berry; pepo)



VITAMINS:

A: med
B: folate, low
C: high
D: 0
E: low
K: low

MINERALS:

K

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 10g/cup

LYCHEE

Fruit (drupe)



VITAMINS:

A: 0
B: low
C: high
D: 0
E: low
K: low

MINERALS:

Cu, K, P, Mg

FIBER: low
FAT: low
PROTEIN: low
SUGAR: 25g/cup

POMEGRANATE

Fruit (berry)



VITAMINS:

A: 0
B: folate, thiamin
C: med
D: 0
E: low
K: high

MINERALS:

Cu, K, P

FIBER: high
FAT: low
PROTEIN: med
SUGAR: 35g/fruit

GUAVA

Fruit (berry)



VITAMINS:

A: med
B: med
C: high
D: 0
E: low
K: low

MINERALS:

K, Cu, Mn

FIBER: high
FAT: low
PROTEIN: low
SUGAR: 15g/cup

CRANBERRY

Fruit (berry)



VITAMINS:

A: low
B: low
C: med
D: 0
E: low
K: low

MINERALS:

Mn

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 5g/cup

QUINCE

Fruit (pome)



VITAMINS:

A: low
B: low
C: med
D: 0
E: 0
K: 0

MINERALS:

low

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 1g/cup

STRAWBERRY

Fruit (aggregate)



VITAMINS:

A: 0
B: low
C: high
D: 0
E: low
K: low

MINERALS:

Mn

FIBER: med
FAT: low
PROTEIN: low
SUGAR: 10g/cup

BLUEBERRY

Fruit (berry)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: med

MINERALS:

Mn

FIBER: high
FAT: low
PROTEIN: low
SUGAR: 15g/cup

BLACKBERRY

Fruit (aggregate)



VITAMINS:

A: low
B: folate
C: med
D: 0
E: low
K: med

MINERALS:

Mn, Cu

FIBER: high
FAT: low
PROTEIN: low
SUGAR: 7g/cup

RASPBERRY

Fruit (aggregate)



VITAMINS:

A: low
B: low
C: med
D: 0
E: low
K: low

MINERALS:

Mn

FIBER: high
FAT: 0
PROTEIN: low
SUGAR: 5g/cup

PASSION FRUIT

Fruit (berry)



VITAMINS:

A: high
B: med
C: high
D: 0
E: 0
K: low

MINERALS:

Fe, P, K, Cu

FIBER: high
FAT: low
PROTEIN: high
SUGAR: 25g/cup

ELDERBERRY

Fruit (berry)



VITAMINS:

A: med
B: B6
C: med
D: 0
E: 0
K: 0

MINERALS:

K, Fe, Ca

FIBER: high
FAT: low
PROTEIN: low
SUGAR: 0

CANTALOUPE

Fruit (berry; pepo)



VITAMINS:

A: high
B: low
C: high
D: 0
E: 0
K: low

MINERALS:

K

FIBER: low
FAT: low
PROTEIN: low
SUGAR: 15g/cup

WATERMELON

Fruit (berry; pepo)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: low

MINERALS:

low

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 15g

HONEYDEW MELON

Fruit (berry; pepo)



VITAMINS:

A: low
B: folate
C: med
D: 0
E: 0
K: low

MINERALS:

K

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 15g/cup

FIGS (DRIED)

Fruit (multiple; syconium)



VITAMINS:

A: 0
B: low
C: low
D: 0
E: low
K: med

MINERALS:

Ca, Fe, Mg, P, K,
Cu, Mn
FIBER: high
FAT: low
PROTEIN: med
SUGAR: 70g/cup

CUCUMBER

Fruit (berry)



VITAMINS:

A: low
B: low
C: low
D: 0
E: 0
K: med

MINERALS:

low

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 1g/cup

TOMATO

Fruit (berry)



VITAMINS:

A: med
B: low
C: med
D: 0
E: med
K: low

MINERALS:

K, Mn

FIBER: low
FAT: low
PROTEIN: low
SUGAR: 5g/cup

PEPPER (GREEN)

Fruit (berry)



VITAMINS:

A: low
B: B6
C: high
D: 0
E: low
K: med

MINERALS:

low

FIBER: med
FAT: low
PROTEIN: low
SUGAR: 5g/cup

PEPPER (HOT)

Fruit (berry)



VITAMINS:

A: low
B: low
C: high
D: 0
E: low
K: low

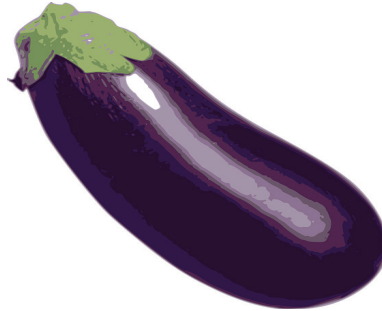
MINERALS:

low

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 1g/cup

EGGPLANT

Fruit (berry; pepo)



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: low

MINERALS:

P, Mg, Mn

FIBER: med
FAT: low
PROTEIN: low
SUGAR: 2g/cup

OLIVES

Fruit (drupe)



VITAMINS:

A: low
B: 0
C: 0
D: 0
E: low
K: 0

MINERALS:

low

FIBER: low
FAT: low
PROTEIN: 0
SUGAR: 0

PUMPKIN

Fruit (berry; pepo)



VITAMINS:

A: high
B: B5
C: low
D: 0
E: low
K: med

MINERALS:

Fe, Mg, Mn, K, Cu

FIBER: high
FAT: low
PROTEIN: low
SUGAR: 8g/cup

ZUCCHINI

Fruit (berry; pepo)



VITAMINS:

A: med
B: low
C: low
D: 0
E: low
K: low

MINERALS:

Mn, K

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 3g/cup

RHUBARB

Stem



VITAMINS:

A: low
B: low
C: low
D: 0
E: low
K: high

MINERALS:

Ca, K, Mn

FIBER: med
FAT: low
PROTEIN: low
SUGAR: 1g/cup

ACORN SQUASH

Fruit (berry; pepo)



VITAMINS:

A: med
B: B6, thiamin
C: med
D: 0
E: 0
K: 0

MINERALS:

K, Mg, Mn

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 0

BUTTERNUT SQUASH

Fruit (berry; pepo)



VITAMINS:

A: high
B: B6, folate
C: 0
D: 0
E: med
K: low

MINERALS:

K, Cu, Mg, Mn, Cu

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 2g/cup

PEAS

Fruit (dry; dehiscent)



VITAMINS:

A: med
B: thiamin
C: high
D: 0
E: low
K: med

MINERALS:

med (many)

FIBER: high
FAT: low
PROTEIN: high
SUGAR: 8g/cup

GREEN BEANS

Fruit (dry; dehiscent)



VITAMINS:

A: low
B: folate
C: low
D: 0
E: low
K: med

MINERALS:

Mn

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 1g/cup

LIMA BEANS

Fruit (dry; dehiscent)



VITAMINS:

A: 0
B: all high
C: 0
D: 0
E: low
K: low

MINERALS:

all high

FIBER: very high
FAT: low
PROTEIN: very high
SUGAR: 15g/cup

KIDNEY BEANS

Fruit (dry; dehiscent)



VITAMINS:

A: 0
B: high
C: low
D: 0
E: 0
K: 0

MINERALS:

all high

FIBER: very high
FAT: low
PROTEIN: high
SUGAR: 0

LENTILS

Fruit (dry; dehiscent)



VITAMINS:

A: low
B: many high
C: low
D: 0
E: low
K: low

MINERALS:

all high

FIBER: high
FAT: low
PROTEIN: high
SUGAR: 4g/cup

ASPARAGUS

Stem



VITAMINS:

A: med
B: med
C: low
D: 0
E: low
K: high

MINERALS:

Fe, Cu, Mn,

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 2g/cup

CELERY

Stem



VITAMINS:

A: low
B: folate
C: low
D: 0
E: low
K: med

MINERALS:

low

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 2g/cup

ICEBERG LETTUCE

Leaf



VITAMINS:

A: low
B: folate
C: low
D: 0
E: low
K: med

MINERALS:

low

FIBER: med
FAT: low
PROTEIN: low
SUGAR: 2g/cup

RED LETTUCE

Leaf



VITAMINS:

A: med
B: low
C: low
D: 0
E: 0
K: med

MINERALS:

low

FIBER: low
FAT: 0
PROTEIN: 0
SUGAR: 0

SPINACH

Leaf



VITAMINS:

A: high
B: folate
C: low
D: 0
E: low
K: high

MINERALS:

Mn, Mg

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 0

KALE

Leaf



VITAMINS:

A: high
B: low
C: high
D: 0
E: 0
K: very high

MINERALS:

Cu, Mn, K

FIBER: med
FAT: low
PROTEIN: 0
SUGAR: 0

BEETS

Root



VITAMINS:

A: low
B: folate
C: low
D: 0
E: 0
K: 0

MINERALS:

Mn, K

FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 15g/cup

CARROTS

Root



VITAMINS:

A: very high
B: low
C: low
D: 0
E: low
K: low

MINERALS:

K, Mn

FIBER: med
FAT: 0
PROTEIN: 0
SUGAR: 6g/cup

BRUSSELS SPROUTS

Bud



VITAMINS:

A: low
B: low
C: med
D: 0
E: 0
K: med

MINERALS:

low

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 1g/cup

CAULIFLOWER

Bud



VITAMINS:

A: 0
B: low
C: med
D: 0
E: 0
K: low

MINERALS:

low

FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 5g/cup

BROCCOLI

Bud



VITAMINS:

A: high
B: med
C: high
D: 0
E: med
K: very high

MINERALS:

k, Mn, P, Mg,
Fe, Ca
FIBER: high
FAT: low
PROTEIN: med
SUGAR: 4g/cup

POTATO

Root (tuber)



VITAMINS:

A: low
B: med
C: med
D: 0
E: 0
K: low

MINERALS:

K, Cu, Mg, Mn,
Fe, P
FIBER: high
FAT: low
PROTEIN: med
SUGAR: 4g/cup

SWEET POTATO

Root (tuber)



VITAMINS:

A: very high
B: med
C: high
D: 0
E: low
K: low

MINERALS:

Mn, Fe, K, P,
Mg, Cu
FIBER: high
FAT: low
PROTEIN: med
SUGAR: 20g/cup

RUTABAGA

Root



VITAMINS:

A: 0
B: low
C: med
D: 0
E: low
K: 0

MINERALS:

Mg, P, K, Mn, Ca
FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 10g/cup

ONION

Stem (bulb)



VITAMINS:

A: 0
B: B6
C: low
D: 0
E: 0
K: low

MINERALS:

Mn
FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 5g/cup

RADISH

Root



VITAMINS:

A: 0
B: low
C: low
D: 0
E: 0
K: low

MINERALS:

low
FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 2g/cup

PARSNIPS

Root



VITAMINS:

A: 0
B: folate
C: low
D: 0
E: low
K: low

MINERALS:

Mn, K, Mg
FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 5g/cup

CABBAGE (GREEN)

Leaf



VITAMINS:

A: low
B: med
C: high
D: 0
E: low
K: high

MINERALS:

Mn, Ca, Mg, P,
K, Zn
FIBER: med
FAT: 0
PROTEIN: med
SUGAR: 20g/cup

CABBAGE (RED)

Leaf



VITAMINS:

A: low
B: low
C: med
D: 0
E: 0
K: med

MINERALS:

low
FIBER: low
FAT: 0
PROTEIN: low
SUGAR: 5g/cup

KOHLRABI

Stem



VITAMINS:

A: low
B: low
C: high
D: 0
E: low
K: 0

MINERALS:

K, Cu, Mn
FIBER: med
FAT: 0
PROTEIN: low
SUGAR: 5g/cup