

ZAT-MindStormers



Edible Coffee/ Tea cups as crispies to replace plastic cups

Team : Tia Vasa, Zia Vagela, Ark Bharadwaj

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Crispy Coffee Cup

- Edible & Crunchy
- Made from Coffee waste
- Sweetner with Ginger for taste & antiseptic prop.



Problem Statement

- India is a country of tea lovers, young generation growing found of coffee.
- Around 500 billion disposable coffee cups are produced each year.
- As per Euromonitor International statistics, on an annual per capita basis, Indians drank 15.6 cups of coffee in 2014 and 16.6 cups so far. The number of cafes in the country that are primarily frequented by millennials has certainly been growing.

Teacups and coffee cups contribute 90% of plastic dispose waste per day.



Problem - India is the Largest Tea Drinking Nation



Per Capita is 750 grams per person only for tea
Per Capita is 17 cups of coffee per person as
per Euromonitor



**'A person drinking three cups of tea in
disposable paper cups will end up ingesting
75,000 tiny microplastic particles'**

<https://www.thehindu.com/news/national/other-states/iit-study-cites-risk-of-plastic-contamination-in-drinking-tea-from-disposable-paper-cups/article33052195.ece>



Within 15 minutes this microplastic layer
degrades as a reaction to hot water,
releasing toxic heavy metals such as
Palladium, Chromium, and Cadmium, and
organic compounds



How Big The Issue Is

How many chai vendors in India ?

Some earn as **much** as Rs. 14 lakh a month,” he adds. There are nearly 10,000 **tea stalls** in the city. Of them, about 2,000 are unlicensed.

How many coffee cups are wasted everyday?

- The **plastic coffee cups** made of the Bisphenol-A(BPA) material are not at all ideal to use for **warm** or **hot** liquids. It will directly lead to releasing the BPA particulates into the liquids. Hence, avoid using **plastic cups** for **hot drinks** or food.

Is it bad to drink hot coffee in a plastic cup?

- The average disposable coffee cup weighs approximately 18g which means we are creating over 125 tones of coffee cup waste every day!

What percentage of waste is coffee cups?

- Up to 90% of single use hot beverage **cups** end up in landfill - equating to around 60,000 kg of plastic per annum.



Side effect of drinking hot tea and coffee in the plastic cups

Experts say that the acid in the stomach usually flushes out whatever wax is consumed; however, if large amounts of it are ingested, it may accumulate and cause an obstruction in the intestines.

According to a recently conducted study, when we pour hot tea or coffee in a paper or a plastic cup, the tiny plastic particles on the inside surface of the cup get dissolved with the drink, making it highly contaminated and harmful for one's health



Researchers say that micro-plastic particles act as carriers of ion, toxic heavy metals - palladium, chromium, cadmium and other biological elements

Plastic cups are said to be more dangerous than wax-coated paper **cups** because they release polymers into the **hot** liquid.



Our Innovation – EDIBLE CUPS for Tea & Coffee drinkers



**Biscuits & Crispies are a must
with Tea & Coffee
Bite the cup and sip the Tea
and Coffee**



Bite the cone and lick the Ice Cream

- We got the inspiration from the cone ice-cream to create the edible coffee cups out of coffee ground

Our Project Plan

Our project plan is to create biodegradable Cups or Glasses which will be edible. made from coffee grounds



Coffee grains is the material which is totally biodegradable and sustainable.



For binding them together we are using edible oil





□ Materials Required

- Coffee extract
- Cornstarch
- Sodium bicarbonate, baking soda
- Lemon juice
- Vegetable oil/olive oil
- Vinegar
- Ginger
- Sugar Free Tablets

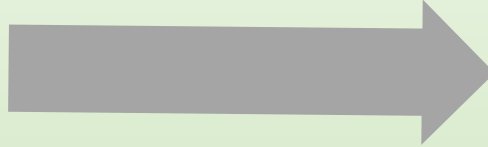


Procedure



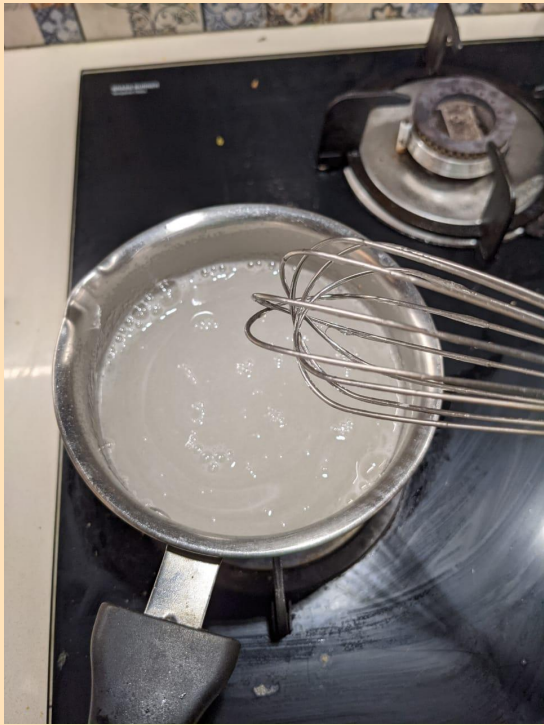
**Step 1:- Take 50g of
cornstarch**

**Step 2:-Add 15 ml of
water**



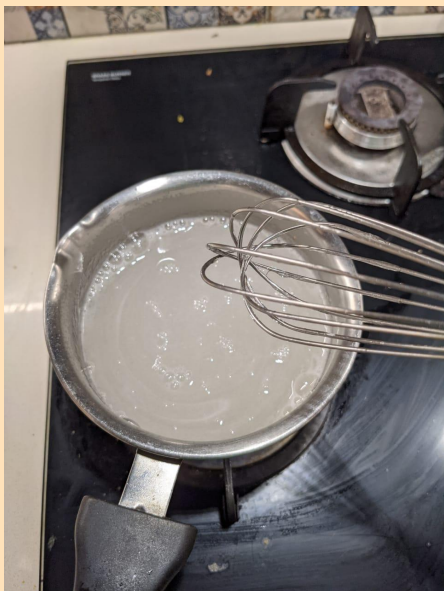
Step 3:-Add 25 g of coffee grounds

Step 4 :-Add 5ml of vinegar



Step 5:-Add 5 ml. lemon juice

Step 6:- Add 2g sodium bicarbonate(baking soda)



**Step 7:-Add 5 ml
vegetable oil**

**Step 8:-Mix all the
ingredients
together**



**Step 9 :-Add 10g of
grated ginger(as
Preservative to
avoid bugs and
ants)**



**Step 10:-Add 2
Sugar free Tablets.
(turn them into the
powder form)**



Step 11:-Heat and mix all the ingredients till it turns into a dough.



STEP 12:-Remove the dough and put it in the moulinets (cup or glass shape)



Step 13:-put the mold in to the oven to bake it.

**Final Product
COFFEE / TEA CUP**

EXPERIMENTS

Strength - The strength of the container is as same as the strength of the normal plastic bowl which can carry regular weight of the food items like nut and berries, chocolates etc.,

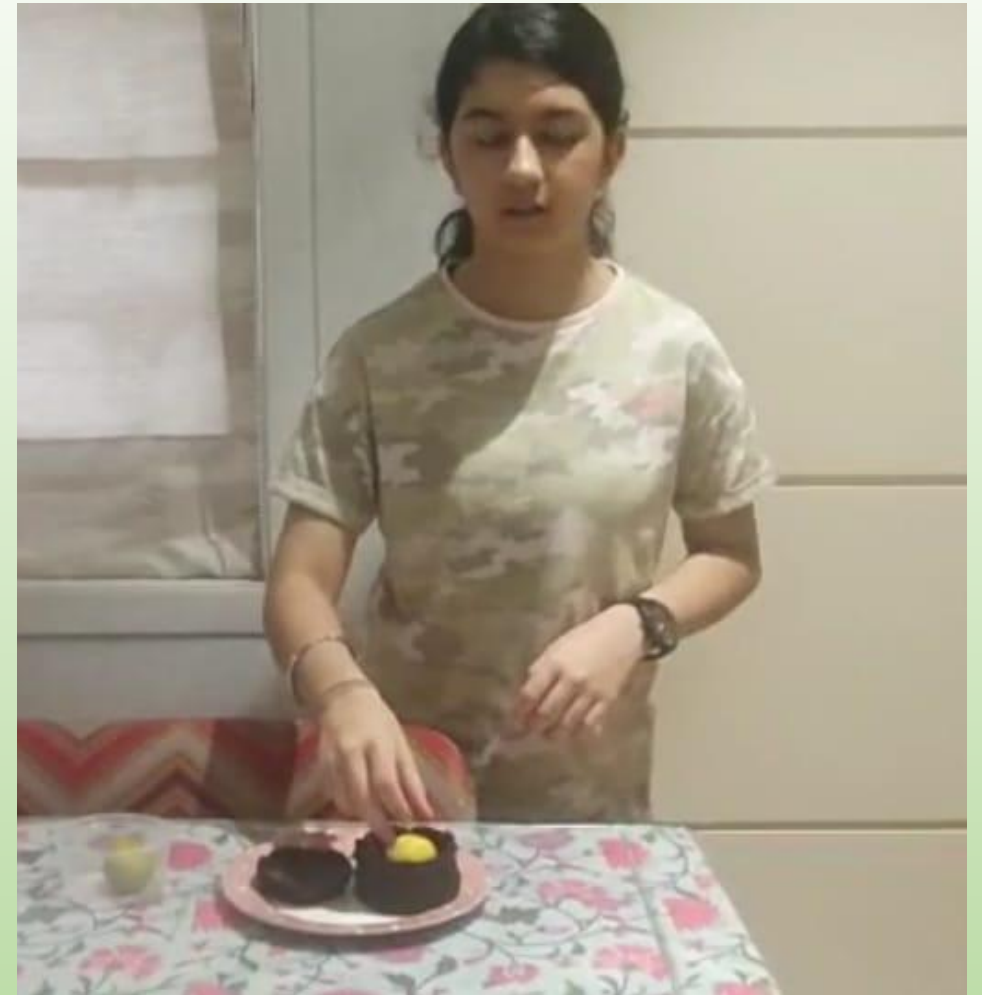


It can carry upto 300 gm

Size- Measuring of 7 by 2 inches, the bowl is the perfect size for soup, salad, cereal, ice cream, nuts berries chocolates and more.

Weight- The weight of the bowl is around 80-100 gm

Shape- It will be round or else we can also be backed and mold in the different shape as per required.



Heat proof - It can resist lukewarm that is 98- and 105-degrees water or any other liquid or warm food in the container

We tested it by adding warm water to the container which was around 105 degree which stayed for the longer time without getting any crack to the container neither the water seeped out of the container.

Impermeable- We tested it with water it didn't seeped it stayed for more then 2 hours



Advantages

- This has huge scope in terms of flavours getting added to the edible cup
- **By adding Sugar tablets and Ginger it becomes a sweet bitter crispy**
- **Coffee grounds** also serve as a nice fertilizer for your garden if you have a green thumb.
- The product is safe on the landfill it's easily disposable and recyclable.
- It's best way to replace the plastic containers
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Disadvantages

It can resist heat only for sometime

But usually Coffee and Tea is time bound in terms of consumption and is had immediately when served

It can only resist specific amount of weight like it can take more than 300 gms.