



Vodafone
Foundation

 DreamLab



2021

DreamLab anti-viral foods Cookbook

Introduction

Vodafone Foundation's DreamLab app enables Imperial College London to accelerate the search for drugs and 'Hyper foods' that could potentially help to fight COVID-19.

The DreamLab app works by using the collective processing power of charging smartphones to create a virtual supercomputer capable of processing many thousands of calculations, speeding up the time it takes to deliver results.

DreamLab users have helped Imperial College London complete Phase 1 of its Corona-AI research project in only six months.

Scientists at Imperial College London in collaboration with Yale School of Public Health have announced early findings from the research, including the prediction of molecules with anti-viral properties in everyday plant-based foods like berries (particularly blackcurrants, cranberries and blueberries), apples, oranges, lemons, cabbage, broccoli, onions, garlic, parsley and beans.

The full research, 'Network machine learning maps phytochemically-rich 'Hyperfoods' to fight COVID-19' is published in the journal Human Genomics.

The recipes in this cookbook were designed by Kitchen Theory using some of these foods prepared with minimal processing (including heat) so as to preserve as many of the bioactive compounds as possible. Enjoy your meal!

Enjoy your meal!

These recipes are not intended to provide medical advice, or to replace any treatments or vaccines for COVID-19. They contain molecules theoretically predicted to target virus-host interactome responsible for virus survival, replication, and host responses, but any suggestion that dietary interventions could be as effective as proven medical treatments or vaccines would be inappropriate and misleading. The relationship between food and disease remains an emerging field of study.



Phytochemically rich “Hyperfoods” to help fight COVID-19

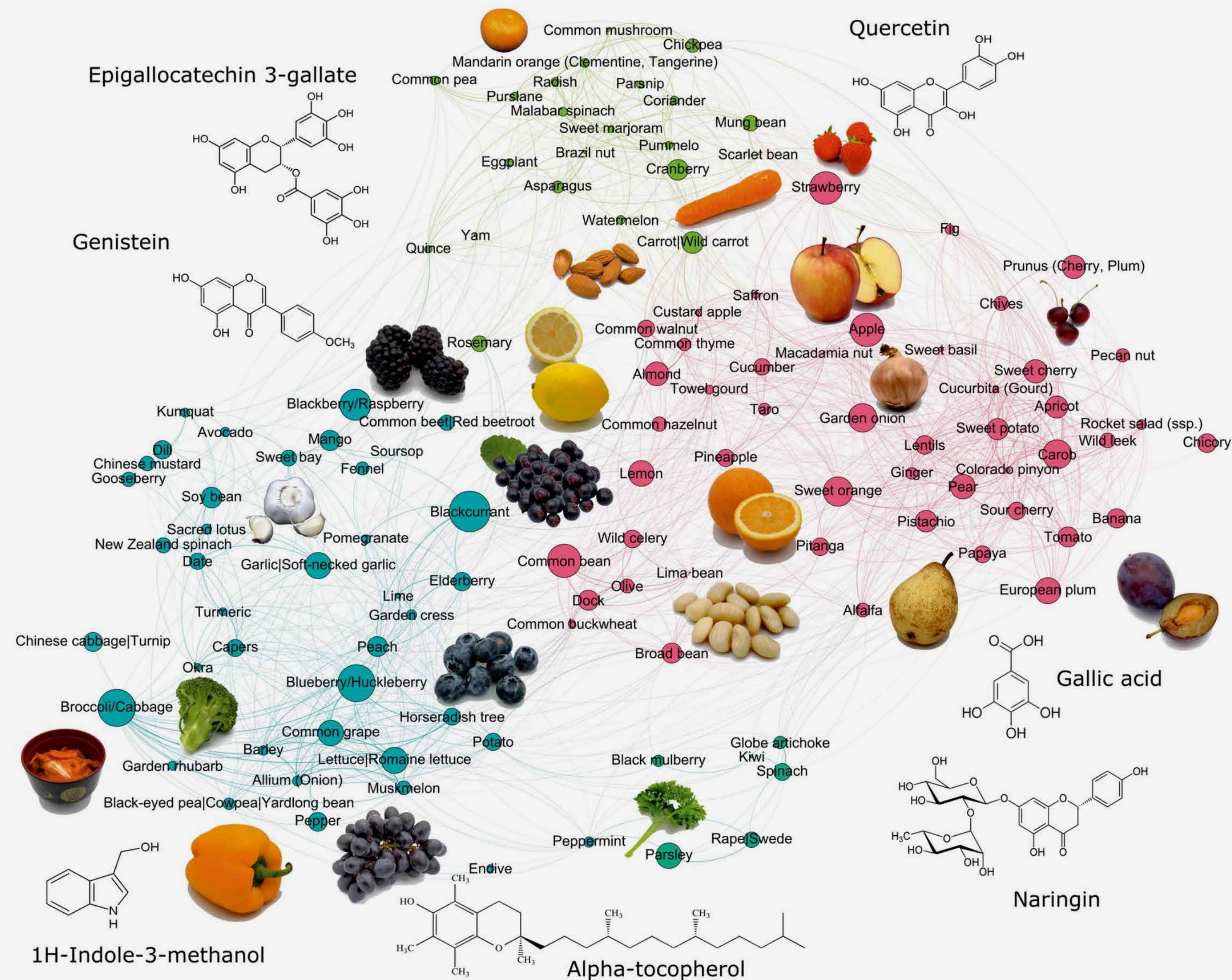
The contained profiles of predicted compounds within specific foods with antiviral properties.

Each node in the figure denotes a particular food item, and node size in each case is scaled by the enrichment score based on the diversity and relative levels of molecules with predicted antiviral properties.

The links between nodes reflect the similarity of antiviral profiles in foods; thus, the clusters of foods illustrate molecular commonality between them.

Laponogov, I., Gonzalez, G., Shepherd, M. et al. Network machine learning maps phytochemically rich “Hyperfoods” to fight COVID-19. *Hum Genomics* 15, 1 (2021).

More info can be found **here**.



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Welcome



"The pandemic has reiterated the importance of a healthy diet, for boosting the resilience of our immune systems to fight infection, to reducing our risk of developing health problems, like obesity or heart disease, that render us more susceptible to the severest symptoms of COVID-19.

This cookbook enables anyone to digest (quite literally) the findings of the DreamLab CORONA-AI research, by increasing our intake of foods rich in anti-viral properties.

Enormous thanks to the global community of over one million volunteers who have powered the DreamLab app to help fight coronavirus; I hope you enjoy these recipes.

Tell us what you think via the Vodafone Foundation social media links listed at the bottom of the page."

Andrew Dunnett

Vodafone Group Director, SDGs,
Sustainable Business and Foundations

"Current research has proven beyond a doubt that diet is directly linked to our physical and mental health. Yet to date we know relatively little about both the thousands of bioactive molecules in food and their potential curative effects.

Working in collaboration with DreamLab our team at Kitchen Theory have developed the recipes that follow based on the HYPERFOODS research which has discovered hundreds of molecules in everyday foods that have anti-viral properties specifically targeting COVID-19.

No time has it been more important that we pay attention to our mental and physical health. So enjoy these nutritious and delicious recipes as you eat yourself healthy in 2021!"

Chef Jozef Youssef

Founder and Chef Patron,
Kitchen Theory, London

"The persistent outbreaks of novel coronavirus disease 2019 (COVID-19) across the world are having damaging effects on global economies and healthcare systems, wellbeing, mental health and societal dynamics, as a whole. There is an urgent need for innovative solutions to combat the coronavirus outbreaks.

As part of ongoing DreamLab DRUGS and CORONA-AI projects we have been combining network artificial intelligence and mobile supercomputing to search for licensed drugs and phytochemically rich "Hyperfoods" against COVID-19. Among the findings are insights into existing medicines for cardiovascular and metabolic disorders and their potential to be "repurposed" to target SARS-COV-2 human networks, as well as identifying tens of molecules with anti-COVID-19 properties in everyday foods such as blackcurrants, blueberries, apples, oranges, lemons, cabbage, broccoli, onions, garlic, parsley and beans

While there is, rightly, much focus on finding and validating vaccines for COVID-19, we are looking for ways to potentially help people when they have contracted the virus, reducing either the duration or the severity of the disease. For patients who may not need hospital treatment, there is a critical need for cost-effective out-of-hospital treatment. We expect that precision nutrition strategies - designed with phytochemically rich Hyperfoods - may offer a novel solution in this regard."

Dr Kirill Veselkov

Assistant Professor/Lecturer in Computational Medicine and Cancer Informatics. Assistant Professor, Yale School of Public Health, USA

Cabbage

Brassica oleracea the family which includes – a variety of cabbage, broccoli, brussel sprouts, cauliflower and kohlrabi have been theoretically predicted by the Corona-AI research to be rich in over 20 anti-viral bioactive molecules including indoles (3-indole-carbinol), flavonols (quercetin, kaempferol, and myricetin), flavanols (procyanidin B2), isoflavonoids (daidzein, genistein) and stilbenes (trans-resveratrol).





Ingredients (Serves 4)

200g White cabbage
50g Bean sprouts
50g Green beans
70g Broccoli
50g Carrot
50g Red onion
30g Green pepper
30g Red pepper
30g Yellow pepper
180g Buckwheat noodles
10g Fresh coriander
30ml Black rice vinegar
25ml Light soy sauce
50ml Rapeseed oil
5g Fresh red chilli
1 Clove of garlic
20g Ginger
Salt to taste

Cabbage Stir-fry

15 min

Method

- 1** Prepare all the vegetables (cabbage, broccoli, green beans, red onion, carrot and peppers) by chopping into large bite size pieces and keep aside.
- 2** Prepare the aromatics; garlic and ginger by slicing into thin slices.
- 3** Bring a pot of water to the boil (this will be used for the noodles).
- 4** Heat the oil in a large pan, once the pan is very hot add the vegetables and aromatics (note that if your pan is not big enough to take all the vegetables in one go you can fry them off in batches, over-crowding the pan will cause the vegetables to steam rather than fry. As a result they will lose texture and require longer cooking).
- 5** Cook the noodles (according to the manufacturers suggestion) in the boiling water. Then strain once cooked.
- 6** Add the cooked noodles to the pan with the vegetables and pour in the black rice vinegar and light soy sauce.
- 7** Once the sauces have coated the noodles and veg, remove from the heat, garnish with chopped coriander and fresh red chilli and serve.



Ingredients (Serves 4)

200g White cabbage
25g Apple
20g Radish
50g Fennel
50g Carrot
25g Spring onion
20g Raisins
1 Orange
25ml Lemon
5g Parsley
60g Mayonnaise
2g Salt

Apple & cabbage coleslaw

15 min

Method

- 1** Soak the raisins in warm water for 10 minutes, then discard the water
- 2** Peel and cut the orange in to segments.
- 3** Slice the cabbage, apple, radish, fennel, spring onion and carrot thinly and mix together with the soaked raisins.
- 4** Add the mayonnaise to the vegetables along with chopped parsley, lemon juice and salt.
- 5** Garnish with the orange segments when ready to serve.



Ingredients (4-6 portions)

900g Savoy cabbage
300g Brussel sprouts
200g Carrot
100g Apple
100g Celery
50g Ginger
50g Garlic
25g Gochujang
100g Orange juice
50g Lemon juice
10g Dill
10g Fish sauce
15g Sea salt

Kimchi

30 min

Method

- 1** Tear off and wash the cabbage leaves individually.
- 2** Wash and cut the Brussel sprouts in half.
- 3** Mix the sea salt with the cabbage and sprouts.
- 4** Place the salted cabbage and sprouts in a pot or large bowl and press overnight.
- 5** Rinse the excess salt off the cabbage and sprouts, place in a large mixing bowl.
- 6** Rough chop the ginger and garlic into small pieces.
- 7** Roughly chop the dill.
- 8** Chop the remaining fruit and vegetables into cubes and mix with cabbage and sprouts.
- 9** Add all the remaining ingredients and mix well.
- 10** Put the kimchi mix into mason jars, packing it in as well as possible, keeping the vegetables submerged in the liquid. Ferment the kimchi at room temperature for four days to a week (this will depend on the temperature of the room).

Apple

The malus pumila (aka apple tree) produces apples of all varieties. Common apples have been theoretically predicted by the Corona-AI research to be rich in over 15 anti-viral bioactive molecules including quercetin, galangin and kaempferol.



Ingredients (4-6 portions)

100-150g Apple
Approx 250g Endives
Approx 100g Pomelo
10g Garden cress
Approx 50g Beetroot
Approx 150g Cucumber
Approx 70g Sweet Italian red pepper
45ml Olive oil
45ml Lime juice
Salt for seasoning

Apple & endive salad

15 min

Method

- 1** Wash and cut all the fruit and vegetables. Use only the flesh of the pomelo, without the pith.
- 2** Mix the olive oil, lime juice and salt to make a dressing.
- 3** Dress the salad and serve immediately.



Ingredients (6-8 portions)

25g Honey
25g Butter
200g Oats
50g Mixed nuts (brazil, hazelnuts, almonds and walnuts)
15g Pumpkin seed
15g Sunflower seed
15g Sesame seed
15g Flax seed
50g Dried cranberries
150g Apple
80g Blackberries
80g Pomegranate
1000g Live yogurt

Granola

20 min

Method

- 1** Mix all the dry ingredients in a bowl.
- 2** Melt the butter and honey in a small pot.
- 3** Mix the dry ingredients with the butter and honey.
- 4** Spread on a baking tray lined with paper and bake for 20-30 minutes at 160C.
- 5** Cool down and store in an air-tight container.
- 6** Serve with the fresh fruit and a dollop of live yogurt.



Ingredients (1-2 portions)

100-150g 1 Apple
15g Peanut butter
15g Sugar
50ml Whole milk
15g Flaked almonds
15g Dried cranberries.
2g Mint to garnish

Caramelised apple

15 min

Method

- 1** Cut the apple into eights, removing the seeds.
- 2** Put the sugar in a dry pan and heat until a caramel forms. Add the milk and peanut butter and mix until uniform.
- 3** Add the apples to the caramel, coat and cook for about 2-3 minutes.
- 4** Serve sprinkled with the almonds and cranberries, with few mint leaves on top.

Orange

Citrus × sinensis, also known as the *Citrus sinensis* (Sweet Orange Group), includes the commonly cultivated sweet oranges, including blood oranges and navel oranges. Oranges have been theoretically predicted by the Corona-AI research to be rich in over 15 anti-viral bioactive molecules including nobiletin, luteolin and naringin.



Ingredients (Serves 4)

160g Avocado
3g Dill
50g Orange supreme
20g Lemon supreme
100g Pomegranate
10g Almond flakes
10g Walnut
10g Hazelnut
20ml Olive oil
2g Maldon Salt

Citrus avocado salad

15 min

Method

- 1** Roast the nuts in the oven at 180° for 7mins then remove and set aside to cool.
- 2** Peel the citrus fruit, cut the segments and keep aside, squeeze the juice out of the remaining citrus flesh and reserve.
- 3** Remove the seeds from the Pomegranate and place on kitchen paper to remove excess moisture.
- 4** Chop the Dill, nuts, and avocado roughly.
- 5** Mix all the ingredients together with the citrus segments and pomegranate, then season with salt, citrus juice and olive oil to serve.



Ingredients (Serves 4)

1ltr Water
2 Duck breasts
30g Table salt
10g Sugar
5g Thyme
10g Garlic
2g Star Anise
2g Black Pepper
2g Cloves
150g Endive
30g Pomegranate
60g Orange supreme
40g Frisee Salad
1g Dill
2g Maldon Salt
15ml Olive Oil

Duck orange salad

25 min

Method

- 1** Make a brine for the duck breast by bring the water to a boil, then add all the spices, table salt and sugar. Take off the heat and keep aside for 20 minutes. Add the herbs and place in the fridge to chill for at least 1 hour.
- 2** Once the liquid is cold add the duck breasts and allow marinate overnight in the brine.
- 3** The next day; remove the duck from the brine and pat dry. Score the skin (cuts diagonally across the skin) and fry skin side down in a dry pan on a medium to high heat until deep golden colour and crispy. Flip the duck breasts over and place in the oven for 4-5 minutes.
- 4** Take the duck out of the oven, sprinkle a pinch of Maldon salt and allow to rest for a further 4-5 minutes.
- 5** Cut the endives in quarters and pan fry with a little olive oil, season with a pinch of Maldon salt then keep aside to cool.
- 6** Peel the oranges and remove the segments.
- 7** Remove the seeds from the Pomegranate and place on kitchen paper to remove excess moisture.
- 8** Chop the dill and wash the frisee lettuce.
- 9** Slice the duck into small thin medallions or shape of your preference.
- 10** Gently mix the frisee lettuce, endives, pomegranate, orange segments together and season with olive oil and Maldon salt, add the duck and serve.



Ingredients (Serves 6)

20g Garlic
150g Olive Oil
65g Lime juice
65g Orange juice
1g Turmeric
2g Ground cumin
1g Dried Chilli flakes
2g Sea salt

Spanish mojo

10 min

Method

- 1** Lightly toast the cumin, turmeric and dried chilli in a dry pan over a low to medium heat.
- 2** In a blender; add the olive oil, garlic, citrus juices and toasted spices.
- 3** Blend until you see a nice consistency and add salt to taste.

Parsley

Petroselinum crispum – Parsley has been theoretically predicted by the Corona-AI research to be rich in over 15 antiviral bioactive molecules including apigenin, myricetin and luteolin.



Ingredients (Serves 2)

60g Buckwheat cooked
20g Buckwheat raw
240ml Water
50g Red peppers
80g Pomegranate
80g Tomato
50g Cucumber diced
1g Garlic
50g Parsley
3g Mint
10ml Olive Oil
15ml Lemon Juice
3g Maldon Salt
Table salt to taste

Tabbouleh

25 min

Method

- 1** Place the buckwheat and water in a small pan, add some table salt to season the water and bring to a rolling boil, then turn the heat down and allow the grains to cook for 20mins. Once cooked (strain if necessary) then set aside to cool.
- 2** Take out the seeds of the pomegranate, dice the red peppers, tomatoes, cucumber and keep aside.
- 3** Finely chop the parsley, mint and garlic.
- 4** Mix all the ingredients together in a bowl, adding the lemon juice, olive oil and maldon salt.



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Ingredients (Serves 2)

180g Red peppers
60g Buckwheat cooked
20g Buckwheat raw
240ml Water
10g Parsley chopped
1g Picked thyme
30g Feta cheese
30g Tinned chickpeas
2g Mint
5ml Olive oil
1g Maldon salt
Table salt to taste

Roasted sweet red peppers

20 min

Method

- 1** Pre-heat the oven to 180C, place the red peppers on a lined backing tray and drizzle some olive oil over and season with a pinch of table salt.
- 2** Place the peppers in the oven for 5mins, then remove and set aside to cool.
- 3** Cooking the buckwheat; place the buckwheat and water in a small pan, add some table salt to season the water and bring to a rolling boil, then turn the heat down and allow the grains to cook for 20mins. Once cooked (strain if necessary) set aside to cool.
- 4** Crumble the feta cheese, drain the chickpeas, chop the parsley and mint.
- 5** Mix all the ingredients (except the peppers) in a bowl seasoning with Maldon salt and olive oil.
- 6** Cut the top off the roasted red peppers, scoop out the seeds.
- 7** Use a teaspoon to fill the peppers being careful to not break the skin.



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Ingredients (Serves 2)

200g Salmon (approx. 2 fillets)
1g Thyme
2g Garlic
30g Spring onions
30g Parsley
30g Coriander
20ml Lemon Juice
10ml Olive Oil
1g Maldon Salt
Table salt to taste

Chimichurri sauce

20 min

Method

- 1** Pre-heat the oven to 190C. Drizzle some olive oil over the salmon fillets and a pinch of salt, then place flesh side down on a hot grill for approximately 2-3 minutes. Place the salmon fillets on a tray with baking paper and put in the oven with the stems of thyme to cook for 5mins.
- 2** Finely chop the garlic, parsley, thyme and coriander. Mix in a bowl with the lemon juice, olive oil and Maldon salt.
- 3** Once the salmon is cooked, allow to cool down for a few seconds before transferring to a plate and spooning over the parsley chimichurri sauce.

Blackcurrant

Ribes nigrum – blackcurrant has been theoretically predicted by the Corona-AI research to be rich in over 20 antiviral bioactive molecules including high levels of procyanidins, daidzein, myricetin and quercetin derivatives.



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Ingredients (Serves 4)

200g Blackcurrant crushed

200g Apple diced

150g Pumpernickel bread

2ltr Water

10gr Raisins

40gr Turmeric

5gr Black peppercorn

50ml Agave

4g Brewer's yeast

Clip top bottle or jar to store the drink

Kvass drink

4 days

Method

- 1** Toast the pumpernickel bread under the grill, making sure not to burn.
- 2** Bring the water to the boil then remove from the heat.
- 3** Pour the water into a container and add the toasted bread, turmeric, and pepper. Cover and allow to cool to room temperature before placing in the fridge overnight.
- 4** The next day; strain the mixture through a fine sieve.
- 5** Bring the strained liquid to 30 degrees and dissolve the yeast.
- 6** Add the raisins and agave and allow the mixture to sit covered on the counter for 6-8hr or until foam bubbles start to subside.
- 7** Strain the mixture through a cheesecloth before filling each clip top bottle or jar 3/4 of the way with 2 raisins each. Close the bottle/jar.
- 8** Keep the bottle/jar in the fridge for 2-3 days making sure to 'burp' the bottles (release the gas) every 12-14hrs.
- 9** Taste the mix each day, as it is a live fermentation the flavours will become more pronounced with time.



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Ingredients (Serves 4)

Filling

- 200g** Blackcurrants
- 200g** Apples (cooking, peeled, cored and diced)
- 50g** Soft brown sugar
- 10g** Ginger
- 1g** Cinnamon
- 0.5g** Nutmeg

Pastry

- 300g** Plain flour
- 200g** Butter unsalted (diced & cold)
- 70g** Golden castor sugar
- 1g** Maldon

Topping

- 1** Egg (beaten)
- 10g** Golden castor sugar

Mince pies

1 hr

Method

- 1** For the pastry; place the flour and butter in a large mixing bowl. Rub the butter into the flour then add the sugar and salt. Knead the dough into a ball and chill in the refrigerator for a minimum of 30mins.
- 2** For the filling; place the sugar in a medium saucepan. Once it starts to soften add the apple, blackcurrants and spices and allow to reduce and cook on a slow gentle heat.
- 3** Once the mixture is cooked to your desired consistency, allow to cool to room temperature.
- 4** When the filling is cool; roll out your pastry to a 2mm thickness, make sure the surface is lightly dusted and cut 12 x 8cm circles then roll up the remaining dough to cut again for the lids at 12 x 6cm.
- 5** Place the 8cm cut rings into the pie moulds using your knuckles being careful not to tear the dough.
- 6** Fill each pastry with 2 tbsp. of the cooled apple and blackcurrant mixture, and add the lids on top.
- 7** Give each pie a light coating with the beaten egg (using a pastry brush) and a sprinkle of golden sugar.
- 8** Chill The pies in the fridge while you preheat the oven to 180C.
- 9** Bake the pies for 15mins then allow to cool down on a heat rack.



Ingredients (Serves 2)

160g Sweet potato
50g Pomegranate
30g Red onion (sliced)
20g Rocket
10g Alfalfa
10g Blackcurrant
10ml Red wine vinegar
10ml Lemon Juice
20ml Olive oil
2g Garlic
1g Thyme
4g Maldon salt
Table salt to taste

Blackcurrant salad

20 min

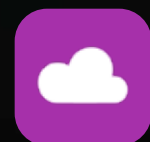
Method

- 1** Pre-heat the oven to 190C.
- 2** Cut sweet potato in to chunks, coat lightly with olive oil, picked thyme and table salt. Roast the potatoes in the oven for 12 min.
- 3** Thinly slice the red onions and mix with lemon juice, vinegar and olive oil.
- 4** Once the potato is cooked and cooled mix together with the rocket, alfalfa, blackcurrants, pomegranate and red onion mixture from previous step, season with Maldon salt.

Did you enjoy this content?

If you would like to learn more, and contribute to power cutting edge research, please download the DreamLab app. If you are already a user, thank you for your contributions that have helped us identify dozens of anti-viral foods and drugs.

Please share with your friends and help increasing our community. The more people using DreamLab, the more we can achieve together.



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