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EAT YOURSELF HAPPY

13 MENTAL
HEALTH
PROMOTING
RECIPES

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EAT YOURSELF HAPPY

This thesis examines how food might improve the mental health of an individual. Several strategies for enhancing mental health are explored. Also highlighted are the ways in which diet may promote mental health and how certain substances which can be found in ingredients might influence mental health.

Melle Lefferts

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Introduction

Personal Motivation to Research Food and Mental Health

Some time ago, after a long day of hard work, feeling exhausted and depleted, I finally got back home. Almost immediately I strolled to the cupboard and discovered a large bag of crisps. Delicious! I consumed it all within fifteen minutes and straight off felt better. I found it fascinating that just by eating a bag of crisps someone could feel better. Unfortunately, this more positive frame of mind did not last very long. Following that, I started to feel bad about myself.

Mental illnesses have become more apparent in recent years. During times of a pandemic, people are required to stay at home, are unable to play sports, or are not permitted to leave the house. As a result, mental health is declining (World Health Organization, 2022). While many people who stay at home try to find comfort in their favourite comfort food, it is uncertain if this inclines someone's mental health.

Then it occurred to me that I had read an article about how eating chocolate can make people happier, and it all came coming back to me. Chocolate contains of a variety of substances that have been linked to mood-enhancing chemicals in

the brain. Along with chocolate, there are several additional dietary supplements that contain mood-enhancing ingredients. As a result, it motivated me to conduct study into the link between nutrition and mental health.

This study is about the relation between food and mental health. The research will not be about how comfort food can boost someone's mood for a couple of minutes, but rather how eating 'healthier' food in general can lead to an improved mental health with less depressive symptoms. To conduct this study, a research question must be made. The research question on which this thesis is about is:

"What ingredients do really make you feel happy?"

To answer this research question, an additional sub-question must be answered. First, is required to understand what substances in ingredients have properties that improve mental health. Additionally, I want to create a collection of recipes that include many of these mental health improving recipes. This part is the creative output of the thesis, where I will try to include a couple of recipes in my very own cookbook.

Food and the Human Body

Food is one of human's most basic needs. As almost everyone knows by now, Abraham Maslow visually structured the fundamental requirements in a pyramid-shaped Hierarchy of Needs. Food, along with shelter and clothes, is positioned at the bottom of this pyramid. Food is fundamental because it nourishes the human body and enables humans to exist. Food, on the other hand, has gone beyond this point in time. Food has developed into a tool for social interaction. Individuals initiate interpersonal encounters by meeting over a drink or inviting someone over for dinner. Since food has moved from a need to a social setting, we find ourselves constantly surrounded by it. As a result, food today is even more important than it has ever been.

Even though people are constantly surrounded by food, many have a limited understanding of what it is (Sathyanarayana Rao et al., 2008). Most will presumably consume anything that is placed in front of them without hesitating. There are many individuals who enjoy food for its flavor, but only a small number who appreciate its finer details, such as texture and mouthfeel as well as flavor interplay. Even fewer try to understand what food is made of and what it might do once it enters our bodies. Nonetheless, individuals' eating behaviors might influence their mental and physical health (Wahl et al., 2017; LaChance & Ramsey, 2018).

While many are aware of the physical health advantages of eating a balanced diet, it also affects our mental health. Food is increasingly being studied for its effect on overall mental health as well as on mental diseases such as depression and anxiety. Consuming a well-balanced and nutrient-dense diet can help enhance mood, boost energy levels, and help you think more clearly. Numerous factors are at work here, ranging from the amount of nutrients consumed to the way vitamins and minerals play a role for the mental health.

The brain needs energy to concentrate and focus. On average, twenty percent of all energy needed by the body is used by the brain (Richardson, 2019). This energy is derived from blood glucose, which is obtained by meal consumption. When the brain does not receive enough energy, someone may be without energy. Consuming nutrient-dense meals daily will help feeding the brains.

Additionally, the connection between gut health and mental health is becoming more apparent. Often referred to as the 'second brain', the digestive system generates more than ninety percent of serotonin (the 'happy' hormone) in the body (Fung et al., 2019). Furthermore, the gut can influence immunity and resilience to stress, both of which can influence mood and mental health. In general, maintaining a healthy digestive system makes it possible to absorb the vitamins, minerals, and nutrients the brains require to grow.

Macronutrients Versus Micronutrients

Carbohydrates, protein, and fats are macronutrients. Macronutrients are the type of nutrients that are required daily on a large scale. These nutrients provide the body with fuel, which it cannot function without. Additionally, proteins are required for the development and maintenance of muscles, organs, the nervous system, hormones, enzymes, and the blood (Voedingscentrum, n.d.).

Micronutrients are nutrients that your body needs in lower amounts and are frequently referred to as vitamins, minerals, and trace elements. They do not provide energy but are necessary for the macronutrients and amino acids in protein to be released. They are also necessary for the normal functioning of a variety of bodily systems (Voedingscentrum, n.d.).

There is conflicting research regarding whether a low carbohydrate diet relates to depression. According to Brinkworth (2009), who researched the effects of a low-carbohydrate diet and a low-fat diet on mood and mental health. While both groups lost weight, low-carb dieters demonstrated considerably higher levels of anger, confusion, and depression. In contrast, a 2007 study by Halyburton et al. found that both groups lost weight, but the low-carb dieters lost more, and both groups experienced improved mood.

Because of the mixed studies, I decided to research only micronutrients that can improve mental health. Nevertheless, advice was found on how to divide the macronutrients in terms of energy (in kcal). While every individual has a unique

nutritional requirement, the Food and Nutrition Board of the Institutes of Medicine (IOM) established a range of appropriate macronutrient distributions (Manore, 2005):

- carbohydrate (45%-65% of energy)
- protein (10%-35% of energy)
- fat (20%-35% percent of energy)

The Institute of Medicine's acceptable macronutrient distribution ranges (AMDR) should be a decent distribution of macronutrients. In addition to the macronutrient distribution, it is advised to limit saturated and trans fats.

In a nutshell, eating is critical for the human body since it supplies the energy necessary for survival. Dividing macronutrients based on IOM's AMDR should be a good recommendation. While everyone consumes food, many are unaware of what it does once it enters the body. Furthermore, while many are aware of the physical health benefits, less are aware of the mental health benefits. Therefore, this thesis will be about food and mental health and how food can improve mental health. In doing so, I want to create recipes that presumably will improve mental health.

Method & Materials

The method for achieving the goal of identifying ingredients that improve someone's mental health has been divided up into three parts. The first part is dedicated to finding substances of which have been shown to improve mental health. The second step is to identify what ingredients have these substances that promote mental health. The last stage is to develop a creative output in which the first two parts have been transformed into recipes, allowing individuals to prepare meals to increase well-being by promoting the mental health.

Part One – Find Mental Health Improving Substances

A comprehensive review of literature was conducted to find components in food that promote mental health. Numerous papers discussed what people eat when they are stressed vs when they are feeling normal. Additionally, there is a huge amount of information available regarding eating comfort food and its effect on mood. Studies by e.g. Hibbeln et al., (2018), Herbison et al., (2012) and Appleton et al., (2007) show that some foods work positively on mental health, namely fresh fruits, fresh vegetables, unprocessed food, fish and meat. Moreover, insights into which foods are most nutrient rich sources of food that have been shown to have a function in the prevention and promotion of recovery from depressive disorders emerged. These nutrients aligned with other articles by mentioning the same nutrients and foods. As a result, it became

known what nutrients and food can be beneficial for improving mental health.

Part Two – Find Ingredients that Contain Mental Health Improving Substances

To discover ingredients that promote mental health, I consulted the National Health Service website (United Kingdom National Health Service). The website is a resource for information on food and health. It also lists lots of information about the vitamins and minerals I researched in the first part of this thesis. Using the website, the minimal daily required amount of vitamin and/or mineral could be found. Another section on the website is a list with good sources of the vitamin and/or mineral. Additionally, the website Healthline was consulted. This website was used to verify facts and to discover new ingredients rich in mental health improving nutrients. While there are some objections against Healthline, saying they are biased on some products, I still choose to use it because the information I needed does not have any commercial value whatsoever. Therefore, for me Healthline is a trustworthy source. Additionally, I double checked the information with other papers and sources. All ingredients discovered have been compiled into a list that can be found in chapter The Happy Foods.

To identify exactly what substances are in an ingredient, the US Department of Agriculture's FoodData Central website was used (FoodData Central, n.d.). FoodData Central is an online data system that contains expanded nutrient profile information as well as linkages to relevant agricultural and experimental research. Occasionally, an ingredient could not be found on the FoodData Central website. As a result, another website named Nutrition Value was consulted (Nutritional Values For Common Foods And Products, n.d.). Likewise, this website allows for the search of a product's nutritional value. Vitamin and mineral values of individual ingredients may be determined using these websites. All ingredients were put into the website to discover their nutritional values. The values for the mental health improving substances were put into a table. The table consists of the ingredient, the minimum intake per mineral / vitamin, nutritional value per hundred grams, how much of the ingredient someone would need to meet the minimum intake per day and

the advised daily intake (ADI) per hundred grams in percentage. Later, when all information was distracted and put into the table, three colours were added per vitamin and mineral. Red if ADI is under twenty percent per hundred grams, yellow if ADI is above twenty percent and up until forty percent and green if above forty percent. With the help of the colours, by only scanning it was possible to see what ingredients contains what particular mental health boosting substance.

Part Three – Create Mental Health Improving Recipes

This thesis culminates with the publication of a cookbook filled with mental health promoting recipes. The recipes are based on nutrient-dense products that have been shown to improve mental health. Due to the lack of ability to create recipes, help was sought from various chefs. Several recipes have been created in collaboration with Bobby Stout of restaurant Tabu and students from Culinaire Centrum Beverwijk.

Background

According to Google, the search term for "comfort food" returns roughly 2,550,000,000 results. This incredibly large number of search results indicates that it is a subject that has been extensively written about. On the other hand, this almost certainly indicates that a huge number of people are reading about it. A large percentage of these search results are recipes. And, surprisingly, many of these dishes are unhealthy, since they are high in saturated fats, processed foods and sugars. As a result, many people who attempt to cook this comfort food are likely to boost their mood for a small time but are uncertain whether they will improve their mental health for a longer time.

This research is about how someone's mental health can be improved rather than someone's mood, physical health, or emotion. Therefore, it is important to understand the fundamental differences between mood, mental health, physical health, and emotion.

Mood

According to P. Thagard (2018), a mood is an affective state. Moods are different from emotions in three ways. To begin, moods often stay longer than emotions, lasting hours or even days, whereas emotions may last only a few minutes. Secondly, emotions are focused on a single object, such as a person or circumstance, whereas moods are considerably more diffuse and lack a definite target. A mood is an abstract emotion, not a reaction to a specific

circumstance. Thirdly, moods lack the intensity of emotions. Typically, moods are classified as having a positive or negative valence. In other words, individuals frequently discuss whether they are in a good or bad mood.

Emotion

Emotions are mental states induced by neurophysiological changes. They are differently related with ideas, sensations, behavioural reactions, and a degree of pleasure or aversion. Emotions and moods are closely entwined. When a person is in a bad mood, it is more likely to experience negative emotions such as sadness, anger, or fear. However, when someone is in a good mood, it is more likely to experience pleasant feelings such as happiness or optimism. As a result, the nature of emotions should provide insight into the nature of moods (Thagard, 2018).

Mental Health

Emotional, psychological, and social well-being all fall under the category of mental health. It influences the thoughts, feelings, and actions. Additionally, it influences how individuals deal with stress, interact with other people, and make choices. Mental health is critical at all stages of life, including childhood, adolescence, and maturity. If someone has mental health difficulties throughout life, thinking, emotions, and behaviour may be altered (Centers for Disease Control and Prevention, 2021).

Physical Health

Physical health is defined as the body functioning normally at all levels. A normal course of biological processes ensures individual survival and reproduction. A dynamic balance between the body's functions and the environment's participation in social activities and socially beneficial work. As well as, the performance of basic social functions, the absence of diseases, painful conditions, and changes. Lastly, the body's ability to adjust to the constantly changing conditions of the environment (Koipysheva, 2018).

Now that it is clear what the differences between mood, emotion, mental health and physical health are, other papers about mood and physical health can be discussed.

Food, Mood and Emotion

Many people find themselves walking to the pantry when they are feeling upset or down to grab something delicious to eat. Finding comfort in food is a common thing and this phenomenon is referred to as emotional eating. Even though the term sounds to eating to cope with bad emotions, it also includes eating for happy emotions, such as eating food to celebrate an occasion or to boost an existing positive mood. In these cases, emotions are still the cause to drive the eating, but in a positive way. In certain instances, emotional eating might be considered a kind of disordered eating. This disorder is described as an increased food consumption as a reaction to a negative emotion. People would eat to alleviate unpleasant feeling or emotions. They have the feeling that eating leads to an improvement in emotional pain.

People who emotionally eat often do this multiple times a week or more to suppress and soothe bad emotions. They may even experience guilt or shame because of their behaviour. This regularly leads to a cycle of overeating and accompanying problems, such as weight gain (Nguyen-Rodriguez et al., 2009).

Recent studies have revealed correlations between diet and mental health. Nonetheless, it is critical to remember that mood may be impacted by a variety of variables, including stress, the environment, insufficient sleep, genetics, mood disorders, and poor nutrition. As a result, it is impossible to identify with certainty whether eating may lift your mood (Arab et al., 2019).

So, when feeling down many crave for calorie-dense, high in sugar snacks like ice cream or cookies to help you feel better. While this may provide a temporary sugar high – which could make you feel better - it is unlikely to benefit in the long run and it may even have harmful implications.

Other Ways to Improve Mental Health Exercising

While food and supplements work well to boost the happy hormone, these aren't the only two ways to do so. Regular exercise is generally recognised to have a variety of beneficial health effects on the body, including strengthening the muscles, bones, heart, and lungs and aiding in the prevention of certain diseases. Recent research from Basso and Suzuki (2017) has shown that exercising regularly may also have antidepressant effects. Even though working out seems to be a

straightforward thing to do, many complex chemical reactions are happening in the body. These chemical reactions may be responsible for having a positive effect on the brains.

Although a detailed description of what occurs in the brain during exercise is beyond the scope of this study, a brief explanation may be useful. When exercising, the brain releases a variety of neurotransmitters, including endorphins, endocannabinoids, and dopamine. Endorphins act as a painkiller and enhance pleasure experiences (Harvard Health, 2021). Endocannabinoids are neurotransmitters believed to be responsible for the “runner's high” which is a state of calm euphoria experienced following an intense workout (Basso & Suzuki, 2017). Dopamine is another important neurotransmitter associated with exercise. Dopamine is critical in the way you experience pleasure. Additionally, it regulates other bodily functions, including heart rate, sleep cycles, mood, attention, motivation, working memory, learning, and pain processing (Preiato, 2022).

Moreover, exercise may enhance neuroplasticity by raising signalling factors. Neuroplasticity refers to the brain's and nervous system's ability to adapt to internal or external stimuli. This is also critical when it comes to developing new talents, hobbies, and languages (Preiato, 2022).

Furthermore, during exercising the heart starts to pump faster, this increases the oxygen supply to the brains. This alters the blood arteries in your brain, likely enhancing executive function, which includes working memory, flexibility of

thought, and self-control. Regular physical exercise appears to enhance blood flow to critical areas of the brain, thereby lowering your chance of developing illnesses associated with cognitive impairment, such as Alzheimer's disease and stroke (Preiato, 2022; Prior & Suskin, 2018; Meng et al., 2020).

Sunshine or Light Therapy

Light therapy, sometimes referred to as phototherapy, is a type of treatment that involves exposure to a source of (artificial) light. The treatment is mostly used to treat (seasonal) depressive symptoms (Watt, 2021), also referred to as seasonal affective disorder (SAD) (NHS website, 2021).

It is believed that light may relieve SAD by encouraging your brain to produce less melatonin (a sleep-inducing hormone) and more serotonin, which is critical for mood regulation (NHS website, 2021; Watt, 2021). The therapy may also be used to align someone's biological clock by synchronising the 24-hour cycle of your brain (aka circadian rhythm - circadian rhythms are 24-hour cycles of critical biological functions that can alter hormone levels, sleep routines, and eating habits.) (Watt, 2021). Additionally, the therapy is done to contribute to the establishment and maintenance of a steady and consistent sleep pattern and to increase someone's alertness (Watt, 2021).

It is believed that light therapy is the most effective in the short term. This implies that while it may help alleviate symptoms when they occur, you may still be afflicted by SAD the following winter.

Food and mental health

Food has been associated with many things. The relationship between food and mental health is just one of them. It is known that under stress many people tend to eat more sweet foods such as candy or chocolate than when they are not under stress. According to research by Ulrich-Lai et al. (2015) both humans and rodents that are under stress prefer to eat appetizing foods that are often relatively high in sugar, carbohydrates and fats compared to more nutritious but less-appetizing alternatives. Additionally, research by el Ansari et al. (2014) shows stressed students with increased appetite choose to eat significantly more sweet foods than when not under stress. Also, the food choices shifted from lower fat foods to higher fat foods. The research also suggests that the overall food consumption did increase under stress as well (el Ansari et al., 2014).

The research by Sánchez-Villegas, Verberne, et al. (2011, p.3) showed that people who eat more trans fats have 48% higher risk of a depression than people who do not eat trans fats. Artificial trans fats are produced industrially by adding hydrogen to liquid vegetable oil to solidify them. It is usually found in processed foods such as baked goods and ready-to-eat snacks (Facts about Trans Fats, 2020). This coincides to the findings by el Ansari et al. (2014). That research shows that a more frequent consumption of sweets, cookies, snacks, and fast food were significantly associated with a higher depression rate for both male and female students. The research also shows a higher consumption of ready-to-eat food

for both males and females when they have a higher level of perceived stress. While the research has shown these results, it is unclear whether these students consume more ready-to-eat food because of the depressive symptoms or get depressive symptoms because of their food pattern. In any case, students who eat less sweets, cookies, snacks and fast food have less depressive symptoms.

Fish and meat are both associated with the mental well-being of humans. People who follow a vegetarian diet have a higher depression rate than people who follow a diet including meat (Herbison et al., 2012). This may be due to a lower intake of B-vitamins. Contrary, did an increased intake of B-vitamins show fewer depressive symptoms (Hibbeln et al., 2018). Additionally, consumption of omega-3 fatty acids which can be found in fish is linked positively with mental health. People who eat fish regularly have a lower risk of being depressed (Appleton et al., 2007; LaChance & Ramsey, 2018). The research by el Ansari et al. (2014) shows a significant positive relationship between consumption of fish and depressive symptoms at male students.

Research by el Ansari et al. (2014) shows a connection between fresh ingredients as fruits, salads and vegetables and stress and depressive symptoms. Their study found that students who consume these fresh ingredients less frequently, perceived higher depressive symptoms and a higher stress level.

The increase of depressive symptoms with the decline of the frequency of eating fresh foods is associated for both males and females.

Even though research suggest eating healthy contributes positively to an improved mental health, lower depressive symptoms, and a lower depression rate, not all people feel the same about this. Most people associate unhealthy food choices as a better mood booster than healthy food choices. They think unhealthy is tastier (Raghunathan et al., 2006) and therefore assume that eating candy will make you happier than eating some fruits or vegetables. Many cultures have this belief that some foods work better as a mood booster than other foods (Wahl et al., 2017). Although many people have this believe that eating unhealthy foods provide a better psychological benefit, the consumption of unhealthy, tastier food may not work better as a mood booster than healthier, less tasty food. To find what food works best as a mood booster Wahl et al. (2017) researched by creating an experiment, using a smartphone assessment where people were asked to fill in what they had eaten, how tasty it was, how much they enjoyed it, and how pleased they were with their meal right after they were finished eating. So, in the research the participants had to fill in every meal they ate per day. This way different food categories (ready-to-eat food, fruit, vegetable) and type of meal (breakfast, lunch, snack, dinner) could be compared with each other.

The research by Wahl et al. (2017) has shown eating unhealthy, tastier food choices did not work as a better mood booster than healthier, less tasting food choices. The different types of food that have been studied in their assessment did not provide evidence that some food types work as a better in-the-moment mood booster. The comparison of the different types of food did not provide any evidence that one food provided better comfort than another food

whatsoever. The research concludes that eating in general leads to a significant improvement in mood (Wahl et al., 2017). Moreover, their research supports the viewpoint that choosing healthy foods, as fruits and vegetables do not only boost the mood but will also provide physical health benefits and also mental health benefits. Therefore, Wahl et al. (2017) wrote "Healthy food choices are happy food choices".

How Does Food Make You Happy?

It is beyond the scope of this paper to fully describe how nutrition can incline mental health of a person. A brief explanation, on the other hand, may be beneficial. Consuming carbohydrates and eating regularly provides the brains with sufficient energy. The brain is fuelled by blood glucose, which is obtained from the carbohydrates people consume. Along with the carbs, the brain needs amino acids to help control thoughts and feelings. Because protein comprises amino acids, it is critical to consume an adequate amount (Rees et al., n.d.). Additionally, according to LaChance and Ramsey (2018) nutrients influence many mechanisms in the brain that are related with brain health and mental illness. Nutrients such as long-chain omega-3 fatty acids, zinc, magnesium and some phytonutrients (natural chemicals in plant food) can promote the nerve system in the brain. Additionally, some vitamins and minerals are necessary for bodily as well as mental wellness.

Along with the brains, the gut plays an important role for the mental health. As written before the guts are often referred to as the 'second brain'. Research by Fung et al. (2019) has shown that the digestive system generates more than ninety percent of serotonin (the 'happy' hormone) in the body. In addition, nutrition plays an important role in systemic inflammation, which have been described as an important cause and effect in depression. Altogether, the function of the gut flora plays an important role in the regulation of mood, cognition and anxiety.

The Happy Foods

To answer the research question “What ingredients do really make you feel happy?” the question must be split up. The first thing that needs to be researched is what nutrients make a person happier.

Iron
long- chain omega-3 fatty acids (EPA and DHA)
Magnesium
Potassium
Selenium
Vitamin A - Retinol
Vitamin B1 - Thiamine
Vitamin B6 - Pyridoxine
Vitamin B9 - Folate
Vitamin B12 - Cobalamin
Vitamin C - Ascorbic Acid
Zinc

Table 1 twelve mental health promoting substances

As shown in the table above, only micronutrients are listed. This is because this thesis focussed on micronutrients rather than macronutrients. As written in the introduction, it is advised to eat 45 – 65% of calories from carbohydrates, 20 – 35% of the calories from fats and 10 – 35% of the calories from proteins (Manore, 2005).

This research to search for nutrients that boost mental health resulted in twelve substances (LaChance & Ramsey, 2018) which can be found in table 1.

Now that it is known which nutrients have a mental health improving effects, it is possible to find ingredients that include a range of these nutrients. The following ingredients which can be found in table 2 have a sizable proportion of mental health promoting substances.

Broccoli
Brussel Sprouts
Cabbage
Kale
Spinach
Peas
Kidney Beans
Liver
Breakfast cereals
Asparagus
Egg
Oyster
Clams
Mussels
Canned Sardines
Canned light tuna
Dark chocolate 45%+
Patato with skin
Nuts
Lentils
Anchovy
Cod
Fish Sticks
Lobster
Salmon
Sardines
Shrimp
Tuna
Walnuts
Seaweed / wakame
Almonds
Peanuts
Cashews
Peanut Butter

Brown Rice
Oats
Banana
Raisins
Dark chocolate 70% - 85%
Milk
Broccoli
Beet greens
Avocado
Cantaloupe
Orange
Tomatoes
Turkey
Chicken
Whole wheat bread
Green Peas
Carrots
Sweet Potato
Pumpkin
Mango
Cheese (Gouda Cheese 30+)
Pork
Fortified nutritional yeast
Strawberries
Kiwi
Cauliflower

Table 2 mental health promoting ingredients

A more detailed table can be found in Appendix A. This table does not only consist of a list with ingredients that contain mental health promoting substances, but also of what substances, the minimum intake per day per substance, the amount of substance per 100 grams, how much you would need per ingredient to reach the minimum amount, and the percentage of advised daily intake per 100 grams.

Even though many of the substances and ingredients are also regular, healthy substances and ingredients, this is not why they are listed in the table. All the substances have special effects in the body that may help to improve mental health. Having said that, it is critical to keep in mind that mental health may be affected by a range of factors, including stress, the environment, insufficient sleep, genetics, mood disorders, and poor nutrition. As a result, it is impossible to state absolutely that these substances would improve an individual's mental health (Arab et al., 2019).

Iron

Iron is required for the formation of red blood cells, which transport oxygen throughout the body. Chen et al. (2013) cites iron deficiency raised the likelihood of developing mental health problems such as depression, autistic spectrum disorder, attention deficit hyperactivity disorder, and developmental difficulties. According to van de Walle (2022) unusual cravings, sadness, recurrent illnesses, and chilly hands and feet are also indicators of iron deficiency. Van de Walle (2022) also cites fatigue is a frequent sign of iron insufficiency. This is because your tissues receive less oxygen, robbing them of energy.

Long- Chain Omega-3 Fatty Acids (EPA and DHA)

For the brains to function properly, it needs the fatty acids that can be found in omega-3s. Omega-3 fatty acid deficiency has been

linked to an increased risk of developing a variety of mental diseases in humans, including depression, bipolar disorder, schizophrenia, dementia, attention deficit/hyperactivity disorder, and autism (Lange, 2020).

In 2009, Osher and Belmaker conducted a review of three studies that examined the effects of Omega-3 fatty acids on three distinct forms of depression: recurrent major depression in adults, major depression in children, and bipolar depression. Omega-3 fatty acids were shown to be more helpful than placebo in treating depression in adults and children in small controlled trials and in an open study of bipolar depression in all three studies.

Magnesium

Magnesium, one of the most prevalent elements in the body, is required for a variety of physical activities and offers various health advantages. Along with these benefits, magnesium may be beneficial as a natural anxiety therapy.

Magnesium may help relieve anxiety in part because it may boost brain function. Magnesium has been shown in research to have a critical part in the regulation of neurotransmitters, which convey information throughout the brain and body. This is the mechanism through which magnesium contributes to brain health (Kirkland et al., 2018).

Potassium

Potassium is a mineral that assists in maintaining the body's fluid balance, helps the heart muscle function properly and helps regulate the nerve signals.

Potassium deficiency has been associated with altered mood and mental fatigue. Potassium influences blood flow, which affects mental health. Low potassium levels

in the bloodstream can interfere with the messages that assist sustain healthy brain function. Hypokalemia, or a potassium deficit, was shown to be prevalent among psychiatric patients with mental illnesses in a 2009 research from Lam et al..

Selenium

Selenium is a mineral that can only be obtained from food. Although it is only necessary in small concentrations, it is vital for a variety of bodily processes.

In persons with Alzheimer's disease, a selenium-rich diet may help reduce mental decline (González-Domínguez et al., 2014) and improve memory loss. A selenium-rich diet may also help maintain a healthy heart, as low selenium levels have been associated with an increased risk of heart disease (Kubala, 2019). Selenium is critical for your immune system's health and correct operation (Kubala, 2019).

Vitamin A - Retinol

Vitamin A is a broad phrase that refers to a collection of fat-soluble chemicals that are critical for human health. It is used for keeping good eyesight, supporting the immune system and for the development and growth of fetuses. Vitamin A also contributes to correct functioning of the heart, lungs, kidneys and other organs (National Institute of Health, 2021).

Vitamin B1 - Thiamine

Thiamine is a B vitamin; it is also known as vitamin B1. Thiamine is needed in the body for growth, development, cellular functions and for the conversion of food to energy (National Institutes of Health (NIH), 2021).

Thiamine deficiency is associated with a wide array of illnesses, including irritability and depressive symptoms (Ghaleiha et al., 2016). Moreover, the deficiency can also result to fatigue or tiredness (Costantini et

al., 2014). Alongside with fatigue, irritability is one of the first indicators of thiamine shortage (Panoff, 2021).

Vitamin B6 - Pyridoxine

Vitamin B6 is also known as pyridoxine. Vitamin B6 cannot be synthesised by the body; thus, it must be obtained from meals or supplements. Sufficient vitamin B6 consumption is critical for overall health and may possibly help prevent and cure chronic disorders (Hellmann & Mooney, 2010).

Vitamin B6 is important to produce neurotransmitters such as serotonin, dopamine and gamma-aminobutyric acid (GABA), which are involved in mood regulation (Clayton, 2006). Research by Hvas et al. (2004) has shown a link between depressed symptoms and low vitamin B6 blood levels and intakes.

Folate – Vitamin B9

Depression patients have been proven to have lower folate levels in their blood than non-depressed patients. Folic acid and folate supplements have been shown in studies to help alleviate depressed symptoms when taken in combination with antidepressant medicines (Bender et al., 2017).

When combined with antidepressant medication, a comprehensive analysis found that treatment with folate-based supplements, such as folic acid and methylfolate, was related with much higher decreases in depressive symptoms than antidepressant medication alone (Roberts et al., 2018).

Vitamin B12 - Cobalamin

Vitamin B12 is also known as cobalamin. Vitamin B12 is required to produce red blood cells and DNA. Additionally, it is a critical component of the function and

development of brain and nerve cells (Harvard T.H. Chan School of Public Health, 2019).

Having low levels of vitamin B12 can contribute to the development of depression by increasing oxidative stress, DNA damage, and cell death in the body. The results of the study from Esnafoglu and Ozturan (2020) indicate that vitamin B12 deficiency or insufficiency, as well as high homocysteine levels, play a role in the cause of depression. Along with depressed symptoms, low or insufficient B12 levels can result in other mental health problems, such as psychosis and mood disorders (Almoallim et al., 2016).

Vitamin C - Ascorbic Acid

Vitamin C is an essential vitamin, which means it cannot be produced by the body. Nonetheless, it serves a variety of functions and has been associated to several health advantages. According to research by Pullar et al. (2018),

fatigue and depression occur together with the physical signs of scurvy, which is a condition caused by vitamin C deficiency. Pullar et al. (2018) cites it is critical to produce the monoamine neurotransmitters dopamine, noradrenaline, and potentially serotonin.

Zinc

Zinc is a mineral that the body requires for a range of vital processes. It is necessary for the proper functioning of around 300 enzymes that are involved in metabolism, digestion, nerve function, and a variety of other activities (Zastrow & Pecoraro, 2014). Since the body does not produce zinc naturally, it must be supplied from diet.

Results

After identifying mental health promoting nutrients and ingredients that contain them, recipes can be created. To create mental health improving meals, it was necessary to enlist the assistance of several cooks. Therefore, student-cooks from Culinaire Centrum Beverwijk and Chef Bobby from restaurant Tabu in Leiden were sought for advice.

At Culinaire Centrum Beverwijk, the cooks helped and created a total of nine delicious

and possible to make at home recipes. All these recipes can be made with just a heat source, some knives, pots and pans. Cook Bobby from restaurant Tabu has created a complete dinner including multiple courses. Starting from appetizer to dessert, he created five recipes.

The recipes that have been created in collaboration with the cooks can be found on the next pages after the Discussion & Conclusion.

Discussion & Conclusion

The purpose of this study is to identify which ingredients can improve someone's mental health. By analysing current research papers in the field of mental health, depression and food, this thesis has shown that by eating specific ingredients someone's mental health can be improved.

As written in the introduction, this thesis's research question is "What ingredients do really make you feel happy?". The list of substances that have mental health promoting effects can be found in *Table 7* in chapter The happy foods. Ingredients that contain these substances can be found in *Table 2*, also in the chapter The happy foods.

Will you be happy after eating the happy food?

Although the happy ingredients have properties in the body that might make someone feel happier, it is not a fact that they will improve mental health. Since mental health can be impacted by many other things than food, it is impossible to conclude someone will feel happier by eating the happy foods. Further research is needed to test if mental health inclines by eating the happy foods.

According to Robert Verweij, there are only few food claims can be substantiated, with the exception that Highly Processed Foods are extremely harmful to the health. But a fifteen-minute walk on an American beach may spare you that research.

What About the Recipes?

During the writing this thesis, I was invited to visit both Culinaire Centrum Beverwijk and Restaurant Tabu to test and taste the recipes. All the recipes at Beverwijk were very tasteful and could be made at home by anyone else (maybe with a little cooking experience). So, of course I had to try to cook these recipes myself. Not only did I feel good after I tasted the recipes, but also during the process of cooking it. For me cooking works as a kind of thought eliminator, which I like. Cooking for others and yourself really is something I would like to do more often.

The dishes from Tabu's chef Bobby were a bit fancier. All recipes can be used together to cook for a long dinner evening. To test Bobby's recipes, I came to visit Tabu in Leiden. The taste of all dishes was delightful. Of course, at home I had to try to make all recipes. Also, during the cooking of these dishes, it felt very comforting to make something so appetizing.

Extending the recipes in future work

The recipes in my cookbook are almost all dishes for dinner. If I were to extend the recipes I would create recipes that can also be eaten as comfort food. As Robert Verweij suggested try to create ice cream like Ben & Jerry's salmon salty caramel with omega 3 or a Magnum magnesium.

Another idea that Robert Verweij suggested would be creating a weekly or monthly eating scheme where all mental health

promoting substances are divided equally to make sure they are consumed regularly to get the best results.

There are some topics that need further research. To begin with, what happens with the happy substances when they are prepared. For instance, when vitamin C is heated for a longer period of time, the vitamin will break. Additionally, how to get most substances out of the food. Is it better to cut all vegetables yourself, or buy it frozen from the supermarket? It is better to use roasted nuts or unroasted nuts?

Future work: Melle's Happy Mix

Since spices contain some of the mental health promoting substances it would be possible to create a tasteful spicemix. This spice mix can be used with many dishes to add some extra flavour, or to promote mental health for its consumers even more.

Conclusion

After researching and the writing of this thesis, numerous insight came to light. To have a healthy diet that may have mental health improving capabilities, it is recommended to consume 45–65 percent of calories from carbs, 20–35 percent of calories from fats, and 10–35 percent of calories from proteins.

And, of course, not forgetting try to include the happy nutrients and happy foods into your diet. The happy foods consist of the twelve nutrients that have shown to have mental health improving effect. These nutrients are folate, iron, long- chain omega-3 fatty acids (EPA and DHA), magnesium, potassium, selenium, thiamine, vitamin A, vitamin B6, vitamin B12, vitamin C and zinc.

Even though the happy foods may have mental health promoting effects, it is critical to remember that mental health may be influenced by a variety of things,

including stress, the environment, insufficient sleep, genetics, mood disorders, and bad nutrition. As a result, it is difficult to say that the described substances, ingredients and recipes will certainly benefit a person's mental health. Having said that, feel free to try out all recipes, enjoy the cooking of the recipes and then conclude for your self how you feel.

Another interesting insight that is important to remember are the differences between mood, emotion, mental health and physical health. While many crave for a calory-dense high in sugar meal to have a better mood, maybe it would be better to consume a little healthier meal, which may improve mental health. Since mental health is so much more than feeling good or bad.

Furthermore keep in mind that there are more ways to improve mental health. Exercising regularly offers a number of health benefits on the body, including muscle, bone, heart, and lung strengthening and assisting in the avoidance of certain diseases. The brain releases a range of neurotransmitters during exercise, including endorphins, endocannabinoids, and dopamine. Additionally, light therapy is used to treat (seasonal) depressive symptoms. Light therapy encourages your brain to produce less melatonin and more serotonin.

To conclude this research I want to cite my statement.

Eat healthy to live happy.

The Recipes



A small appetizer

Watercress soup

INGREDIENTS

- 1 onion
- 2 cloves of garlic
- 1 large floury potato
- 1 bunch of watercress
- 100 grams of spinach leaves
- 5 dL vegetable stock
- 1 cup of crème fraîche
- 1 tbsp almond shavings
- Pinch of sugar

HOW TO PREPARE

1

Chop the onion, crush and cut the garlic cloves, peel the potato and cut it into brunoise (small cubes).

2

Wash the watercress and pluck the leaves from the stems, keeping the leaves separate.

3

Heat a little olive oil in a pan, fry the onion and garlic in it, when this is nice and glazy add the stalks of the watercress and the potato cut into brunoise, fry this briefly, then add the vegetable stock, let this simmer for about 30 minutes, then add the washed spinach and the leaves of the watercress, let this cook through for a minute, blend this whole with the hand blender into a smooth soup, and season with ground pepper.

4

Put a frying pan on low heat and roast the almond shavings with the sugar in it until it has a nice brown colour, then let it cool down, grind it in a kitchen machine.

5

Pour the soup into a small glass and sprinkle with a little almond crumble.



FRESH FROM
THE SEA

Tuna Tartare

INGREDIENTS

- 200 grams of tuna
- 1 avocado
- 3 tbsp lemon juice
- 2 tbsp ginger syrup
- 2 tbsp soy sauce
- 4 oysters
- Tray with flour
- Tray with eggwhite
- Tray with bread-crumbs

METHOD

1. Put a pan of water on the stove and bring to the boil, halve the avocado and remove the stone, boil the avocado for 2 minutes and carefully remove the skin. In the food processor, turn the avocado with the lemon juice and ginger syrup into a nice smooth cream, season with some salt.
2. Cut the tuna into nice little cubes, remove any membranes, and prepare it with the soy sauce, season with pepper and salt.
3. Open the oysters and remove the oyster from the shell, first through the flour, then through the egg white and finally through the breadcrumbs. Deep-fry the breaded oysters for 2 minutes until crispy.
4. Present the tuna tartare in a cutter on the plate, decorate it with the avocado cream, the wakame and the fried oyster.



DANGEROUSLY TASTEFUL

Fried mussels with toast and Dutch shrimps



INGREDIENTS

- 25 medium-sized mussels
- Some Dutch shrimp
- 50 grams red and yellow peppers
- 30 grams red onions
- 2 cloves of garlic
- 2 sprigs of thyme
- 4 sprigs of parsley
- 4 slices of brioche
- 2dL white wine
- 1dL olive oil

METHOD

1. Wash the mussels well, put a pan on high heat, put a little bit of oil in the pan, now add 1 sliced garlic, the thyme and the mussels, fry briefly and deglaze with the white wine, let it boil for about 3 minutes and drain the mussels when they are all open, now let it cool.
2. Cut the onion into half rings and the pepper into strips.
3. Brush the toasts with olive oil and place them in the oven at 180 degrees Celcius for about 5 minutes, until they are nicely browned.
4. Take the mussels out of the bowl and flour them lightly.
5. Heat the rest of the olive oil and fry the onion, peppers and garlic for about 2 to 3 minutes, then add the mussels and fry for the same amount of time, add the Dutch shrimp and warm them in the mixture, then present them directly on a plate with the toast and garnish with perry leaves.



THE FINEST FISH YOU'VE EVER
TASTED

Slowly roasted Cod

INGREDIENTS

- 200 grams pumpkin
- 8 florets of broccoli
- 500 grams of cod
- 2 potatoes
- 150 grams butter
- Olive oil

METHOD

1. Heat a fryer to 170 degrees Celcius.
2. Wash the potatoes under the tap, peel them with a thin peeler to nice long skins, pat them dry and fry them to crispy chips until they are no longer bubbling, let them drain on kitchen paper and salt them lightly.
3. roast the pumpkin with a dash of olive oil and some sea salt at 180 degrees Celcius in the oven for 15 minutes, then cut it nicely into shape.
4. Blanch the broccoli florets for 2 minutes in salted water and rinse them cold.
5. Rub the cod with olive oil and some sea salt and pull it in a vacuum in a vacuum machine, cook it 20 minutes sous-vide at 42 degrees Celcius, or half an hour in the oven at 50 degrees Celcius, then burn it with a gas burner, put the butter in a pan with a thick bottom and make it warm on the fire while stirring until it turns brown and smells nutty, fry the broccoli in it briefly, present it all nicely on a plate and finish it with the browned butter.



Chinese Cabbage vegetables

INGREDIENTS

- Potatoes
- Beets
- Brussels sprouts
- Mushroom
- Broccoli
- Onion
- Kale
- Sun-dried tomatoes
- Butter
- Vegetable Stock
- Courgette
- Garlic
- Thyme
- Rosemary

HOW TO PREPARE

1. Preheat the oven to 180 degrees Celcius hot air.
2. Prick the potatoes and pot them in the oven for 30 minutes at 180 degrees Celcius.
3. Cut the mushrooms in half and marinate them with garlic, fresh garlic, thyme and rosemary. Put them in the oven for 10 minutes at 180 degrees Celcius.
4. Blanch the Brussels sprouts and broccoli.
5. Make courgette balls with a pomme parisienne corer and if you don't have one, cut them into small pieces of about 5mm.
6. Blanch the courgette .
7. Make sweet & sour with 1/3 water, 1/3 sugar and 1/3 vinegar and some rosemary and thyme.
8. Chop the onion and put it in the sweet & sour.
9. Take the potatoes out of the oven and smash them with a fork.
10. Roast pine nuts in a dry pan.
11. Pick the kale.
12. Cut the sun-dried tomatoes into small pieces.
13. Fry the kale in oil, garlic and onion
14. Then deglaze with vinegar and soy sauce.
15. Make a strong vegetable stock
16. Heat up the potatoes with the stock, the roasted pine nuts and a dash of cream.

HOW TO SERVE

1. Put the mashed potato on a plate.
2. Place all vegetables on top.
3. Glaze with butter.



SPICING UP THE HAPPY HORMONE

Lentil soup with sun-dried tomatoes

INGREDIENTS

- 2 garlic cloves
- 1 white onion
- 150 grams sun-dried tomato
- 300 grams red lentils
- Lemon juice
- 650ml cream
- 75ml marscarpone
- Zest of 1 lemon
- 2 tsp paprika powder
- 1 tsp coriander seeds
- 1 tsp fennel seeds
- 1 tsp cumin
- ½ tsp nutmeg
- 1 tsp cumin powder
- ½ tsp cinnamon
- 1 potato

HOW TO PREPARE

PREPARING THE SOUP

1. Heat a large pan with olive oil over medium-high heat.
2. Finely chop the onion, garlic, sun-dried tomato and fry this over medium-high heat for about 5 minutes until it becomes translucent in the large soup pan.
3. Make the spice mixture from 2 tsp paprika, 1 tsp coriander seed, 1 tsp fennel seed, 1 tsp cumin, ½ tsp nutmeg, 1 tsp cumin powder and ½ tsp cinnamon. Let this caramelise for about 2 minutes in the pan, stir well.
4. Then pour 500ml of water into the pan and add the lentils. Let it simmer for about 35 minutes on a low heat. Pour the remaining 500ml of water into the pan and keep stirring regularly.
5. After 35 minutes, take a hand blender and puree until smooth.
6. If desired, pour cream into the soup (maximum 500ml).
7. Season the soup to taste with salt, pepper and some lemon juice.

PREPARING THE POTATO

1. Peel a large potato and save the peel
2. Cut the skin into thin strips.
3. Fry at 170 degrees Celcius until golden brown.
4. Sprinkle with salt.

PREPARING THE LEMON MASCARPONE CREAM

1. Mix 150ml of cream and 75ml of marscarpone cream with a whisk.
2. Flavour with the zest of 1 lemon.

FINISHING THE SOUP

1. Put the soup in the bowl.
2. Put the cream in a circle with a little olive oil.
3. Place the patato skin in the middle.
4. Enjoy the soup!



JUST SO GOOD!

Stuffed Pasta

INGREDIENTS

- 500 grams of pumpkin
- 1 onion
- 1 clove of garlic
- 2 tbps ricotta
- 0.5 tbsp orange zest
- 1 tsp turmeric
- 100 grams pasta flour
- 1 egg
- Salt



- Preheat oven to 170 degrees Celcius.
- Cut out the pumpkin with a sharp knife. Then put in the oven at 170 degrees Celcius for 60 minutes.
- In the meantime, you can start with the filling.
- Chop the onion and garlic finely. Then gently fry them in oil.

HOW TO PREPARE

MAKING THE PASTA

1. First, mix the ingredients (flour, egg and salt) with a fork. Then knead by hand. Keep kneading until it becomes elastic.
2. If you have a pasta machine, put the ball through the machine so it gets the desired thickness.
3. If you do not have a pasta machine, put some flour on the counter and place the pasta ball on it. Make sure you use enough flour so that it does not stick to the countertop. Then thin it out with a rolling pin. Make sure all sheets have the same thickness.
4. When the pasta has the right thickness it is time to make shapes for the pasta. Put enough flour on the counter and then lay the pasta shapes on it. Use a round pastry wheel so that the round shapes can be made in the pasta. Make sure you make an even number of circles, because you need two sheets to fill the pasta.

MAKING THE STUFFING

1. Take the pumpkin out of the oven after 60 minutes. Let it cool down a little afterwards.
2. Remove the inside (seeds + threads) of the pumpkin with a tablespoon.
3. Carefully remove the flesh from the skin and finely chop the pumpkin. Then mix with the fried garlic and onion.
4. Then season it with some pepper, salt, turmeric and some orange rasp.

FILLING THE PASTA

1. Fill half of the pasta with the filling. Then place the other half of the pasta on top. Use some egg to make the pasta halves stick together.
2. Press the pastas together with a fork until you see some teeth.

COOKING

1. Brown the butter in a pan. Fry some crispy sage leaves in the butter.
2. At the same time, cook the pasta for 2 minutes.

SERVING

1. Put the pasta on your plate and put the sage butter on top.

A SURPRISING FLAVOUR

Cauliflower snack

INGREDIENTS

- Cauliflower
- Egg white (or 2 eggs)
- Breadcrumbs
- Pepper
- Salt
- Flour

HOW TO PREPARE

1. Cut the cauliflower into small pieces of about 5cm.
2. If you do not have a loose egg white, separate the egg white from the egg yolk.
3. Season the egg white with salt and pepper.
4. Then dip the sliced cauliflower in the egg white, then dip it in the flour, then dip it in the breadcrumbs.
5. Heat up a pan with a good layer of oil and fry the cauliflower until it's crispy.
6. Voilà a quick snack.



NOTHING BETTER THAN

Chocolate banana bites



INGREDIENTS

- 2 bananas
- 300 grams of dark chocolate
- 100 grams peanut butter
- 50 ml cream

HOW TO PREPARE

1. Cut the banana into small slices.
2. Melt the chocolate au bain marie (put the chocolate in a heat-resistant bowl and place it on a pan of lightly boiling water. Make sure that no water droplets or steam enter the bowl and that the bottom of the bowl does not touch the water. Allow the chocolate to melt gently, stirring regularly).
3. Dip the banana in the chocolate and place it on a plate.
4. Mix the peanut butter with the cream over a low heat until it has a squirtable consistency.
5. Dust the peanut butter/cream in a piping bag or sandwich bag.
6. Cut a dot from the bag and pipe the peanut butter/cream over the chocolate.
7. Allow the chocolate to harden.

SOMETING ELSE

Spinach crisps

INGREDIENTS

- Spinach
- Pepper
- Salt

HOW TO PREPARE

1. Preheat the oven to 90 degrees Celsius, warm air on top and bottom only.
2. Wash and dry the spinach.
3. Place the spinach on a baking tray and spread a thin layer of sesame oil over it.
4. Put the baking tray in the oven at 90 degrees for about 1 hour.
5. Take the crisps out of the oven and sprinkle them with salt and pepper, because they are crisps after all.



FRESH YOUR DAY

Happy Juice

INGREDIENTS

- Carrot
- Orange
- Ginger

HOW TO PREPARE

1. Clean the carrots and cut into small pieces. Then put them in a juicer.
2. Then remove the peel from the orange, cut the orange into small pieces and put in the juicer.
3. Then take a small piece of ginger, remove the skin with a spoon and put in juicer.



BETTER THAN YOUR GRANDMA'S

Rice pudding of brown rice

INGREDIENTS

- 125 grams of brown rice
- 1200ml whole milk
- 60g cane sugar
- 100 grams of sultanas
- Salt
- pumpkin
- 1 vanilla pod
- 1 piece of cinnamon
- 2 ½ oranges
- Grater of orange
- 25 grams of butter
- 50gr walnuts

METHOD

1. Wash the rice until it becomes clear and drain it.
2. Cut the vanilla pod in half and scrape out the seeds.
3. Cook the rice with the milk, sugar, cinnamon and vanilla.
4. Cook the rice over a low heat for about 1.5 to 2 hours. The rice should be soft with a slight bite. The milk will thicken automatically due to the starch in the rice. If it thickens too quickly, you can always add more milk, so be careful. Add the sultanas in the last half hour of cooking.
5. Meanwhile, cut the pumpkin in half. Peel one side and remove the seeds.
6. Cut into small cubes and cook in water with a pinch of salt for about 8 minutes.
7. Cool the squash in a bowl of cold water.
8. Preheat the oven to 180 degrees hot air.
9. Squeeze the orange and mix with the cane sugar.
10. Melt the butter on medium heat and add the juice of the orange while stirring. Let it reduce for about 5 minutes until larger bubbles appear. Add the pumpkin and stir through the orange caramel until the pumpkin pieces are covered. Scoop out of the pan and allow to cool.
11. Roast the walnuts for 5 - 10 minutes at 180 degrees. Check regularly as they can burn quickly.
12. Finish the rice pudding with orange juice and grater. Add some salt if required. Garnish with pieces of sliced orange, walnut and pumpkin.



EVERYBODY LOVES CHOCOLATE

Choco-soul with mango

INGREDIENTS

- Dark chocolate
- Eggs
- Sugar
- Water
- Flour
- Cocoa powder
- Mango
- Whipped cream
- Nuts

PREPARING THE MANGO SAUCE

1. Blend the mango with a hand blender or with a blender.
2. Boil the mango and add the sugar.
3. Mix in the whipped cream.

METHOD

MAKING THE CHOCO-SOUL

1. Pre-heat the oven at 180 degrees Celsius.
1. Melt the chocolate au bain marie. Add the butter.
2. In a separate bowl, add the egg white and sugar and then whip this up.
3. Then add the chocolate while stirring.
4. In a separate bowl, combine the egg white and sugar. Whip this up.
5. Add the chocolate mixture and the egg white mixture together. Finally add the flour.
6. Put it in a baking mould for 25 - 30 minutes at 180 degrees Celsius.
7. Leave it in the fridge for about 2 hours.

SERVING

1. Put the chocosoul on a plate.
2. Add the mango filling.
3. Enjoy.
4. Optional: add some jelly.



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*Thank
You*



ABOUT THIS THESIS

This thesis examines how food might improve the mental health of an individual. Several strategies for enhancing mental health are explored. Also highlighted are the ways in which diet may promote mental health and how certain substances which can be found in ingredients might influence mental health.



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