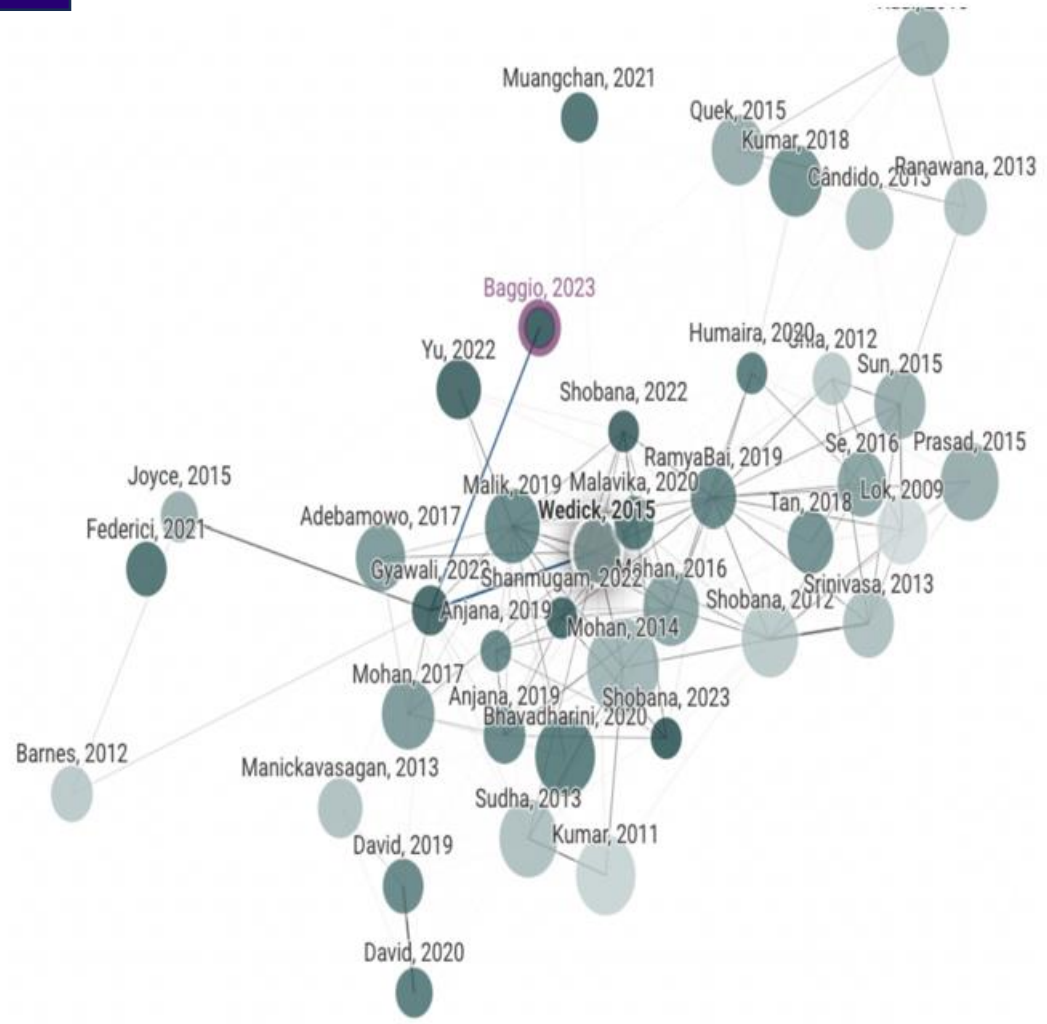
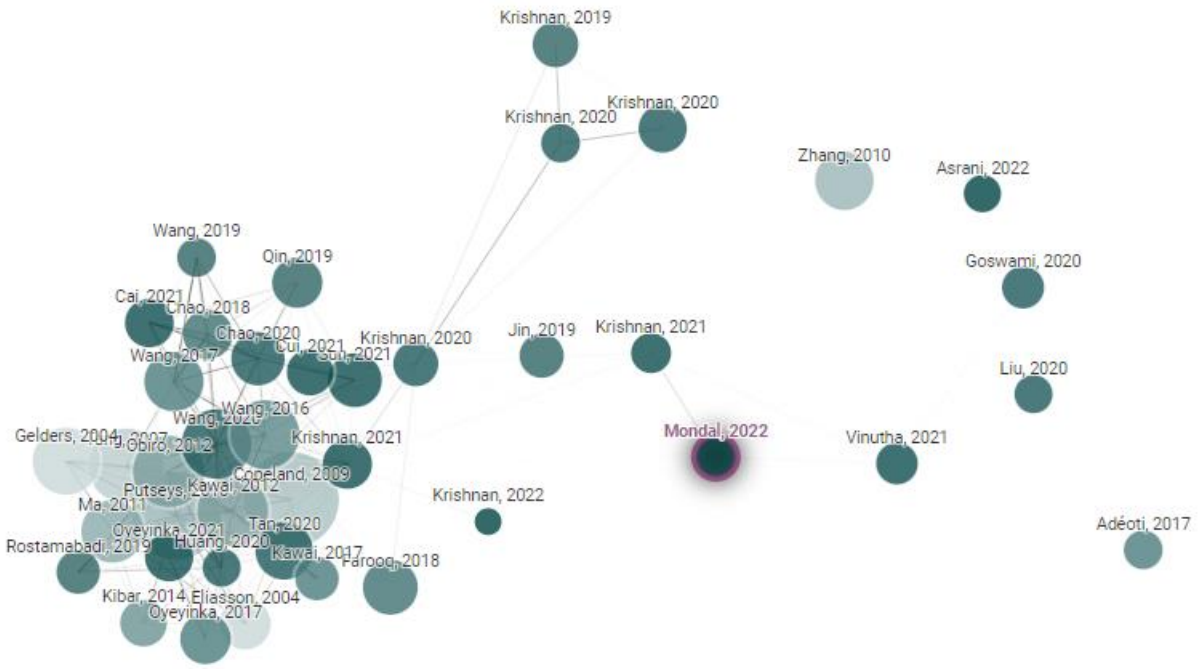
1



Brown rice or whole grain rice (WGR) rich in dietary fiber and many bioactive compounds (e.g : γ-amino butyric acid , γ-oryzanol and polyphenols) can not only starch digestion and prevent rapid increase in the blood glucose levels, but also reduce oxidative stress and damage to the liver , thereby regulating glucose and lipid metabolism.

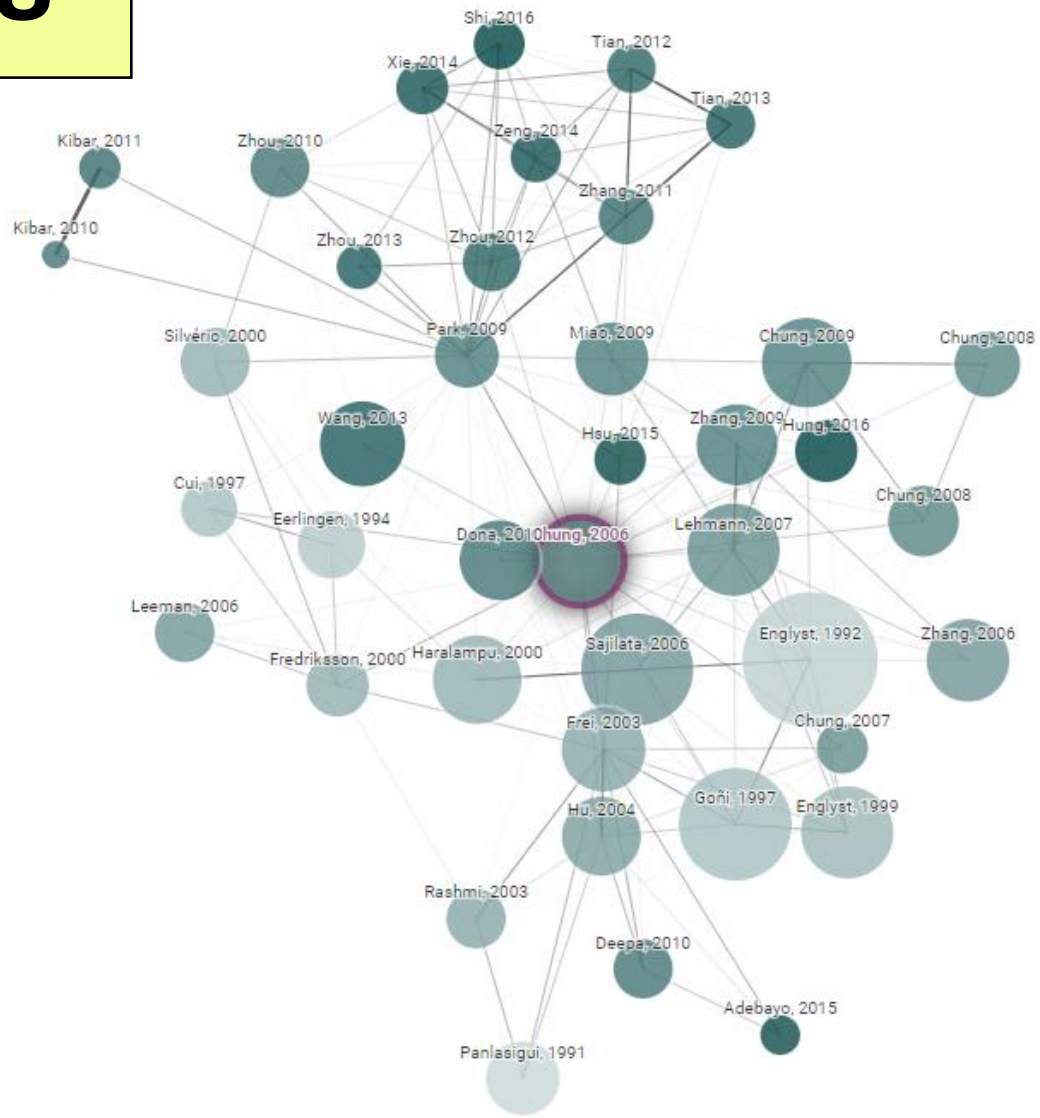
4

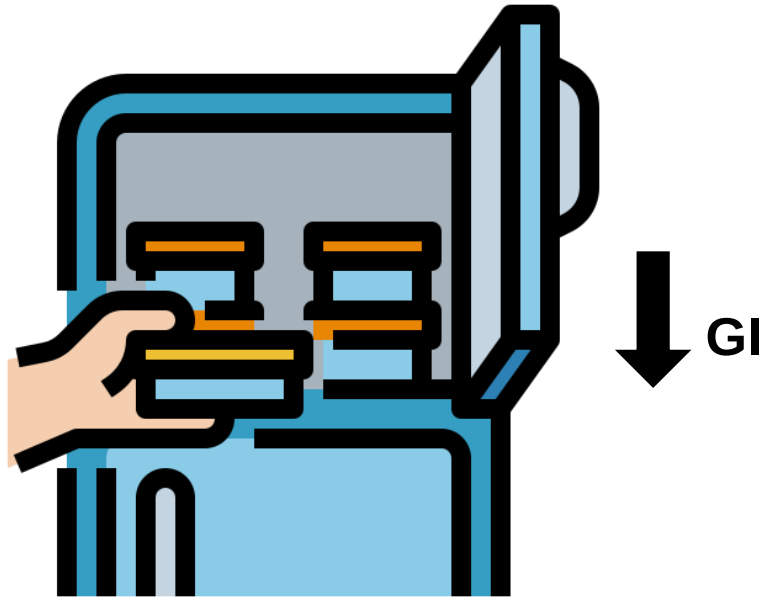


GI

Lipids, which include fats and oils, can help reduce the glycemic index (GI) of a food when consumed in combination with carbohydrates. When starch and lipid molecules interact, they can form a compact V-shaped arrangement that promotes processed crystallinity. This structural change limits the ability of carbolytic enzymes to digest them and reduces their bioavailability, reducing the GI.

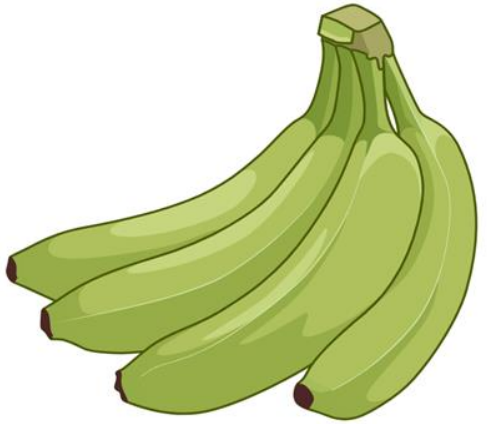
8





Refrigerating the food induces retrogradation in which disaggregated amylose and amylopectin chains in a gelatinized starch of food reassociate to form more ordered structures, which further reduces the susceptibility of starch to digestive enzymes coincident with an increase in the formation of slowly digested starch (SDS) or resistant starch (RS).

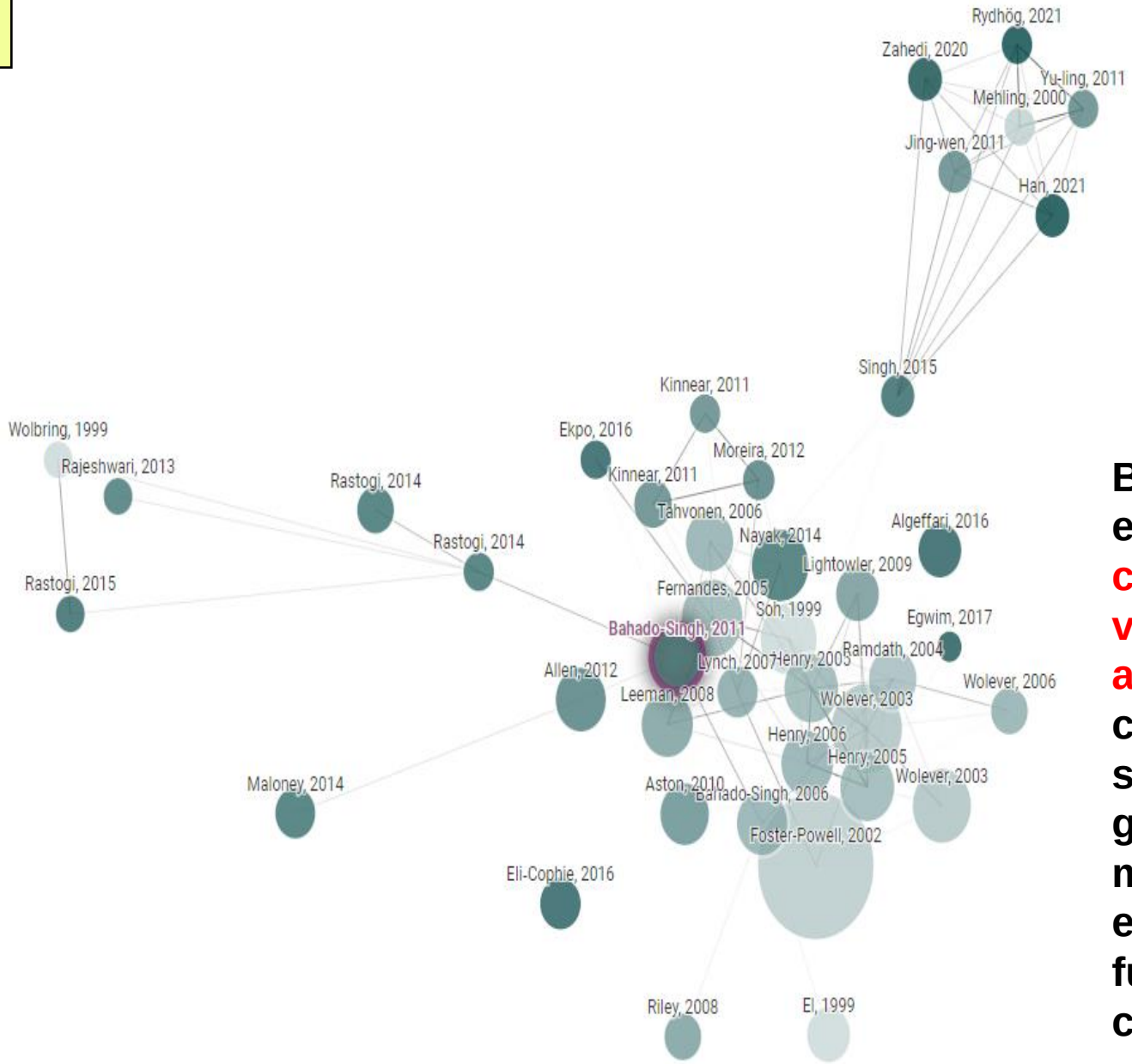
21

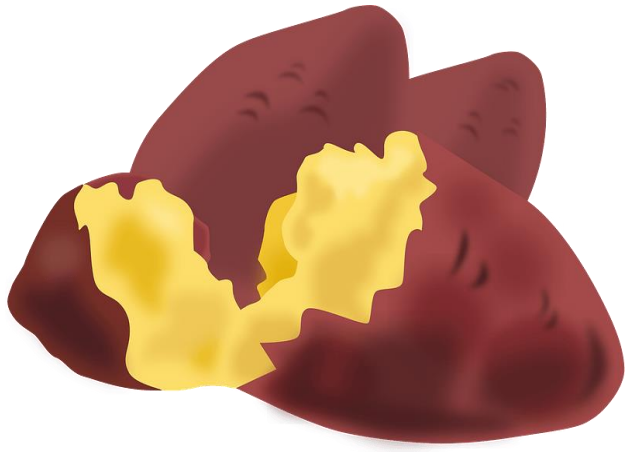


GI

Unripened bananas, also known as green bananas have lower sugar content, resistant starch as a prebiotic for better digestion, and essential nutrients like Vit C, Vit B6, provitamin A, minerals like Potassium, Phosphorus, Magnesium, Zinc, and dietary fibers. The resistant starch contributes to the feeling of fullness and satiety, reducing the overall calorie intake. The lower sugar content is less likely to cause a rapid spike in the blood sugar level making it a healthy addition to a balanced diet.

28

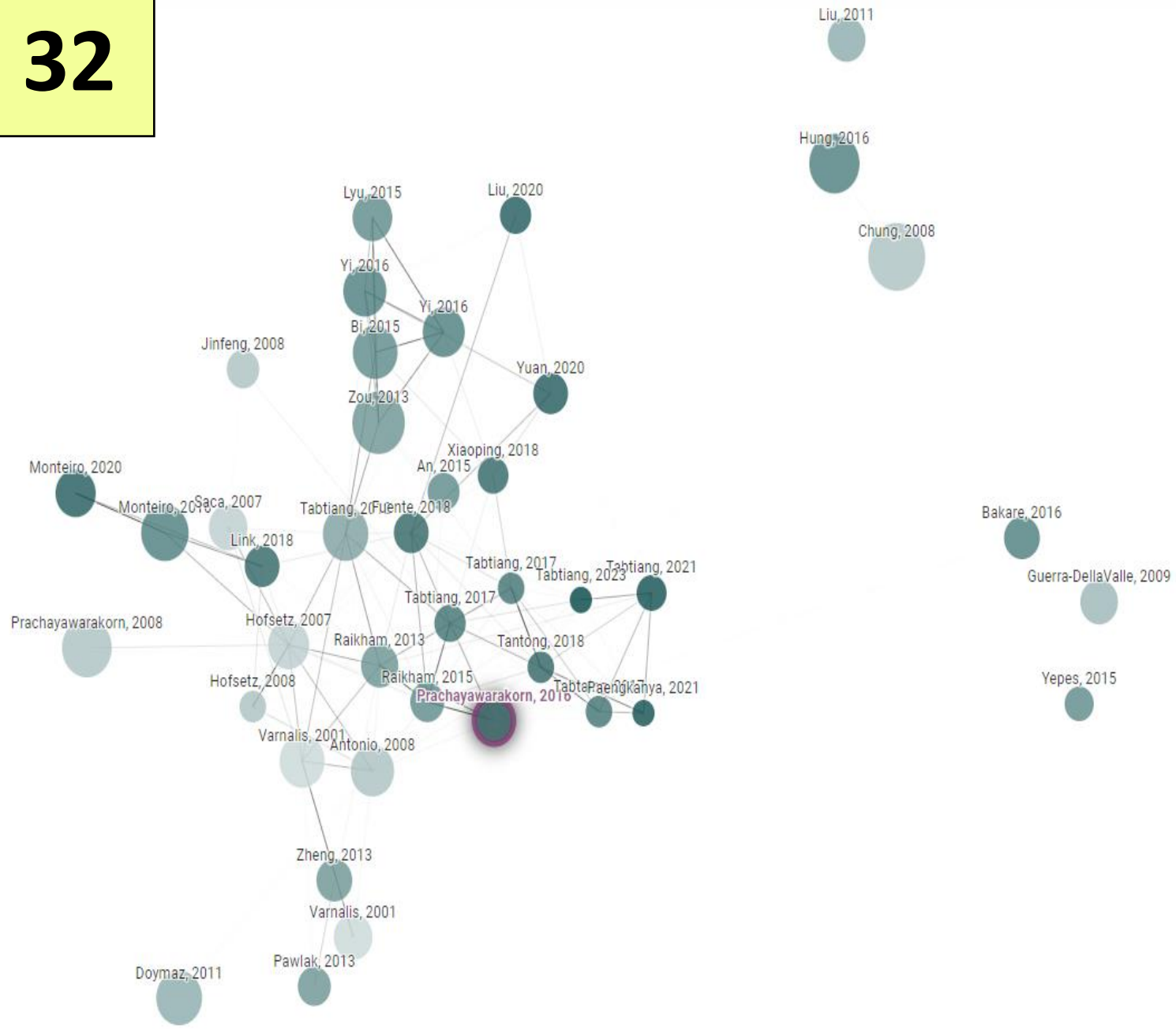


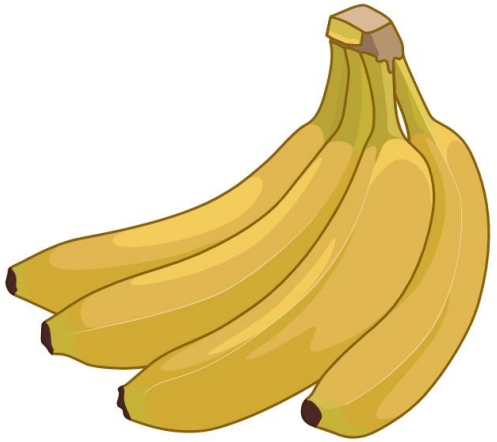


GI

Boiled sweet potato is highly nutritious especially in vitamin A (from β-carotene), vitamin C, and several B vitamins, minerals such as potassium and manganese, and dietary fibers. The complex carbohydrates are digested slowly leading to a steady release of glucose into the blood and helping in managing blood sugar levels. The energy metabolism gives a sense of fullness and the antioxidants help in combatting oxidative stress.

32

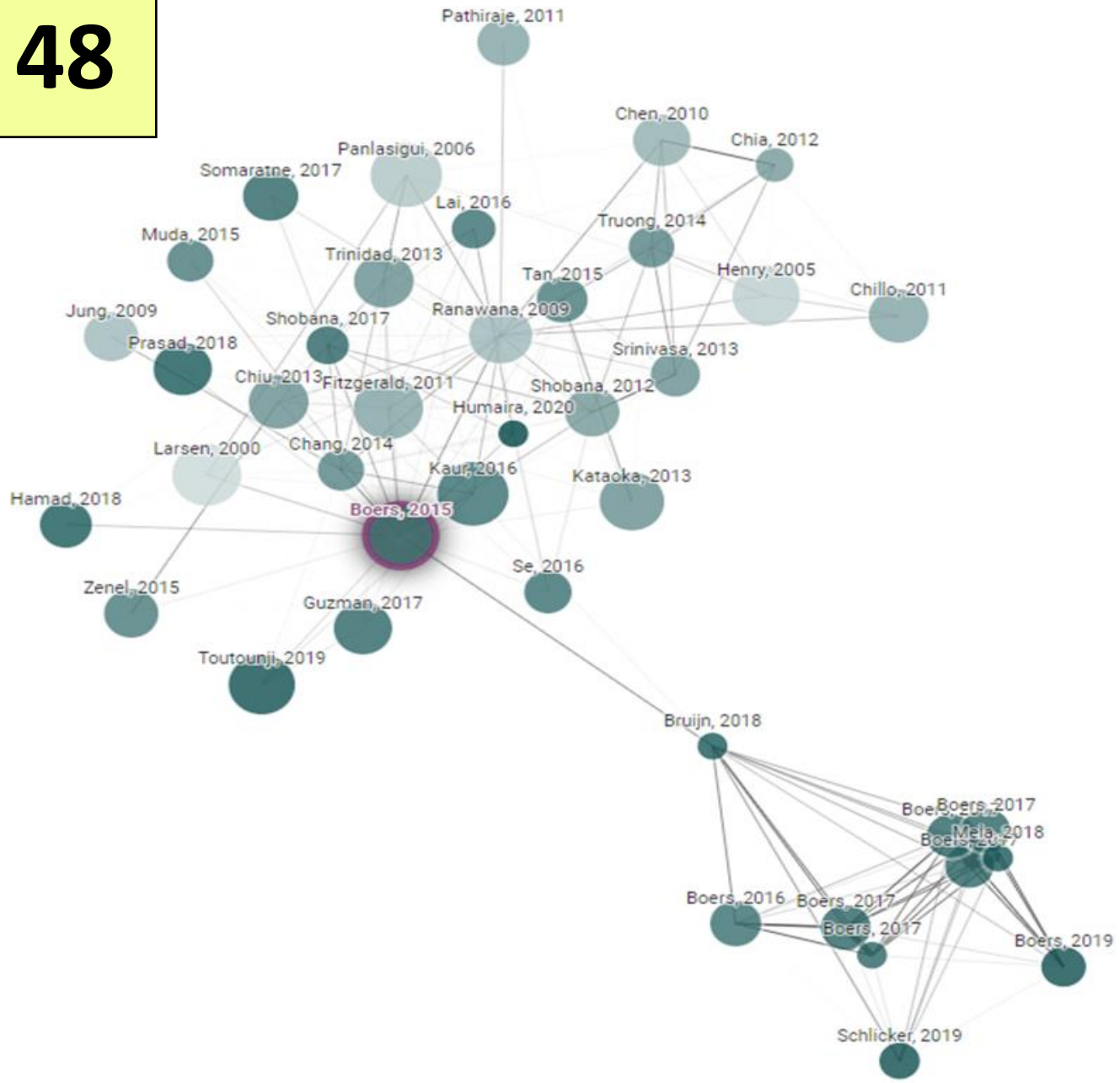




GI

Ripened bananas are a rich source of Vit C, Vit B6, Potassium, Magnesium, dietary fibers, and antioxidants along with high sugar content. These natural sugars glucose, fructose, and sucrose, are more easily digestible providing a rapid energy boost and modulating the blood sugar level in the body.

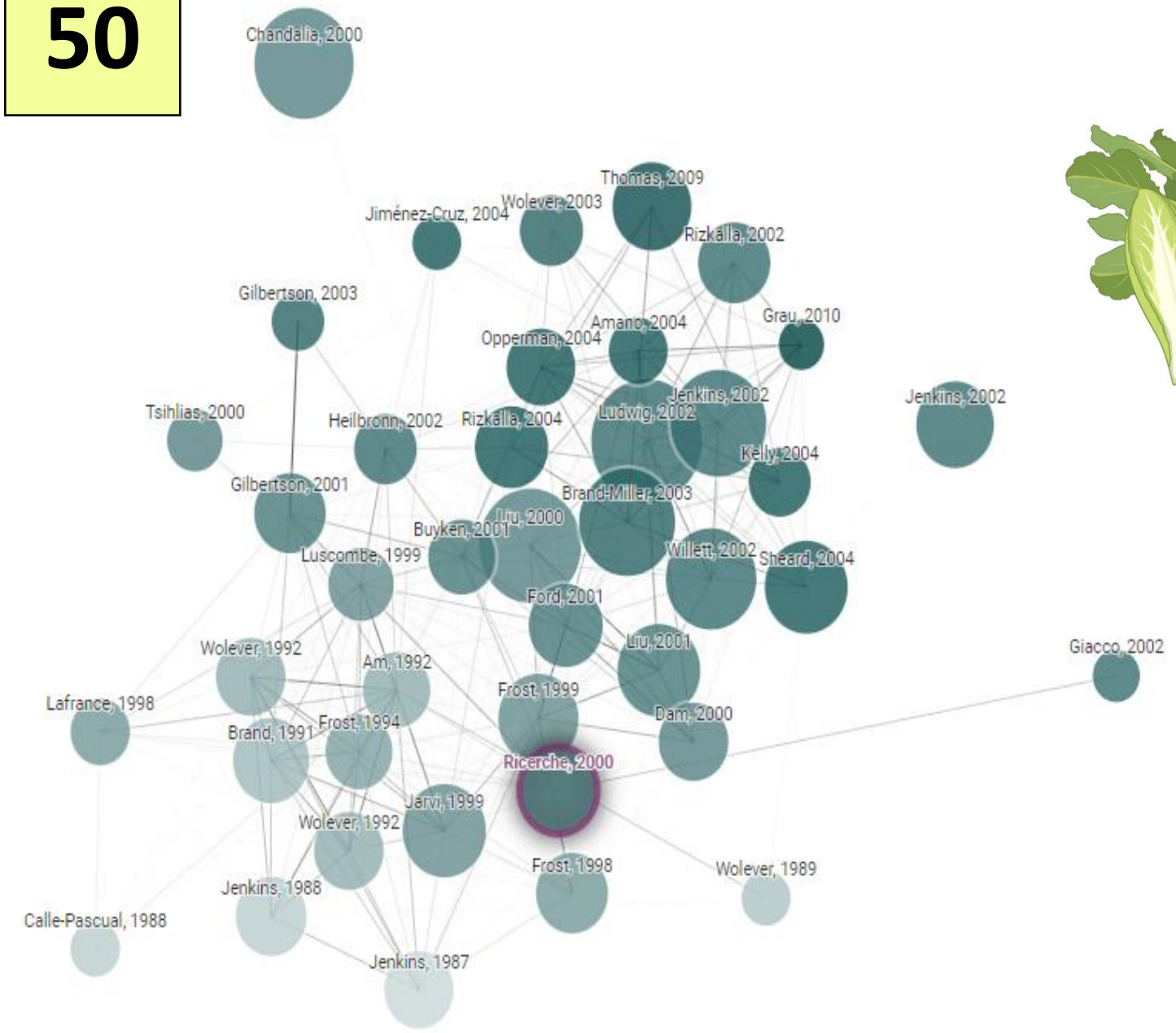
48



GI

All-purpose flour or white flour is milled whole grain wheat (WGW) having starchy endosperm. It lacks bran, dietary fibers, and other essential nutrients present in WGW and has high carbohydrate content making it readily digestible. The rapid rise and subsequent fall in blood sugar may result in a temporary increase in energy followed by a quick drop, and regular consumption may contribute to insulin resistance. The starch richness makes it a high-GI food with severe metabolic issues.

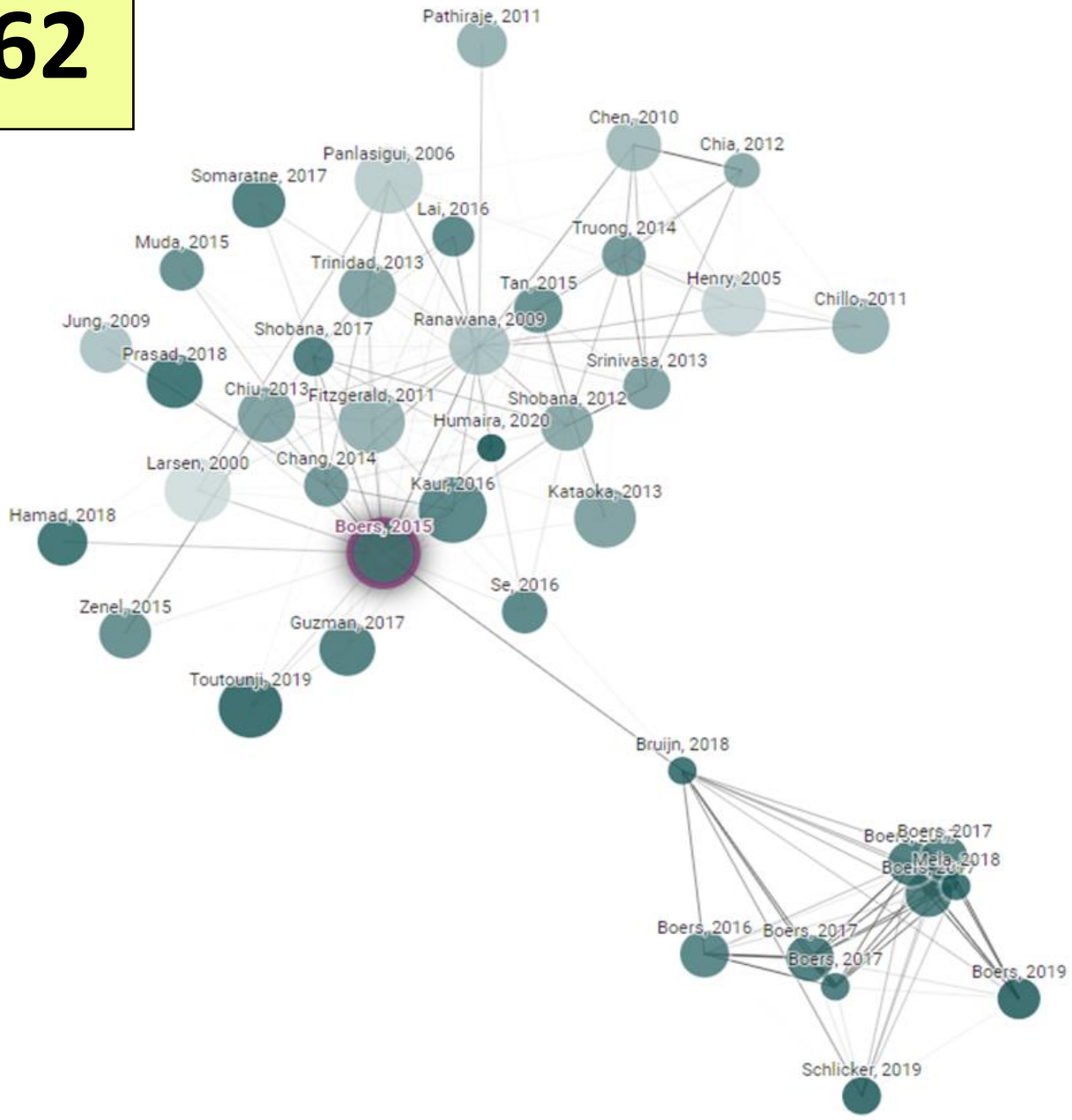
50



GI

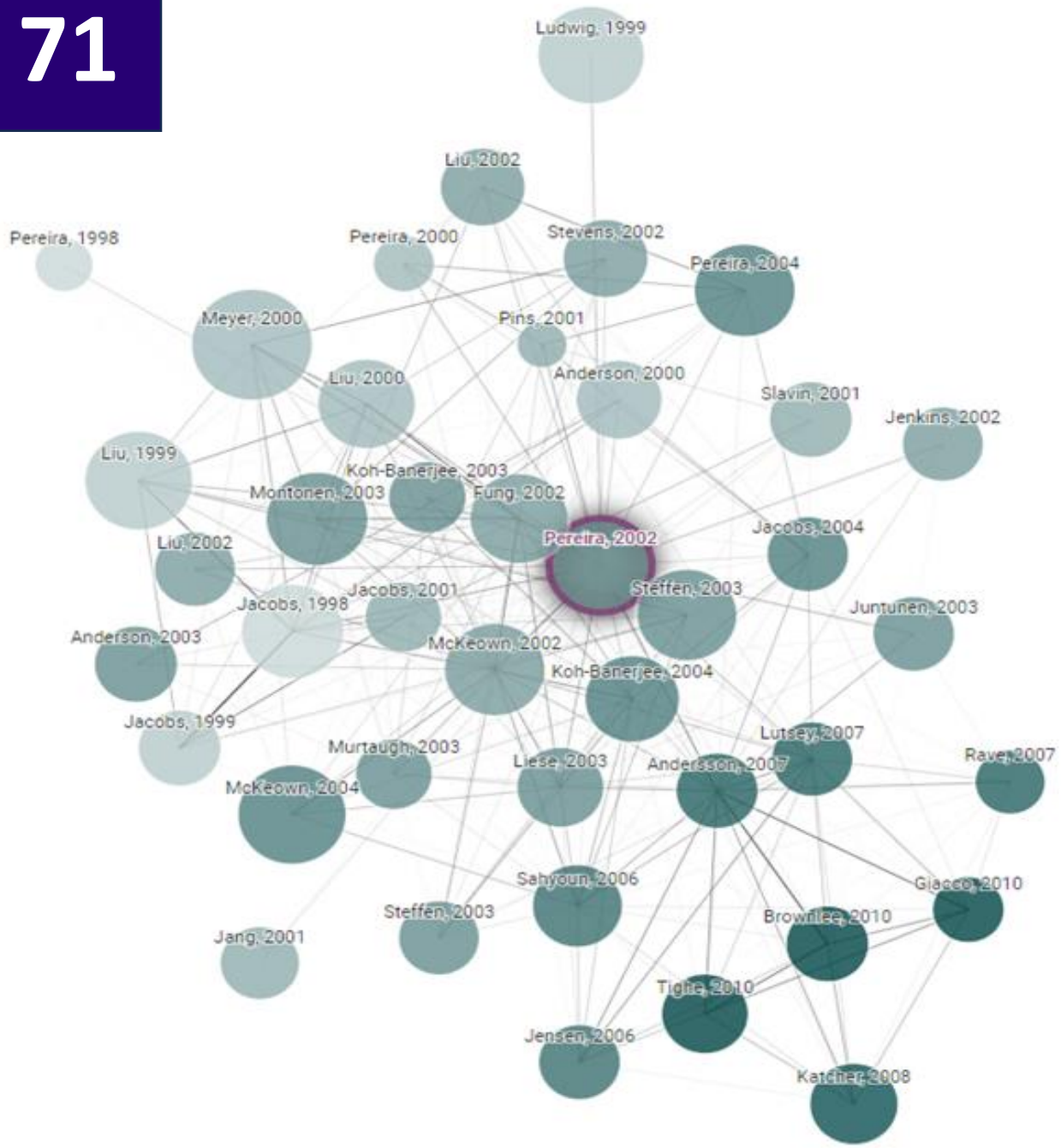
The wide range of green vegetables is an excellent source of many vitamins such as A, B, C, and K along with folate, dietary fibers, potassium, iron, magnesium, and calcium, low in lipids and have β-carotene. The antioxidants in them protect the cells from oxidative stress and reduce the risk of diseases, Fe helps in effective oxygen transport supporting energy production. Green vegetables prevent spikes in blood sugar due to the level of Mg, high fiber, and satiety.

62



GI

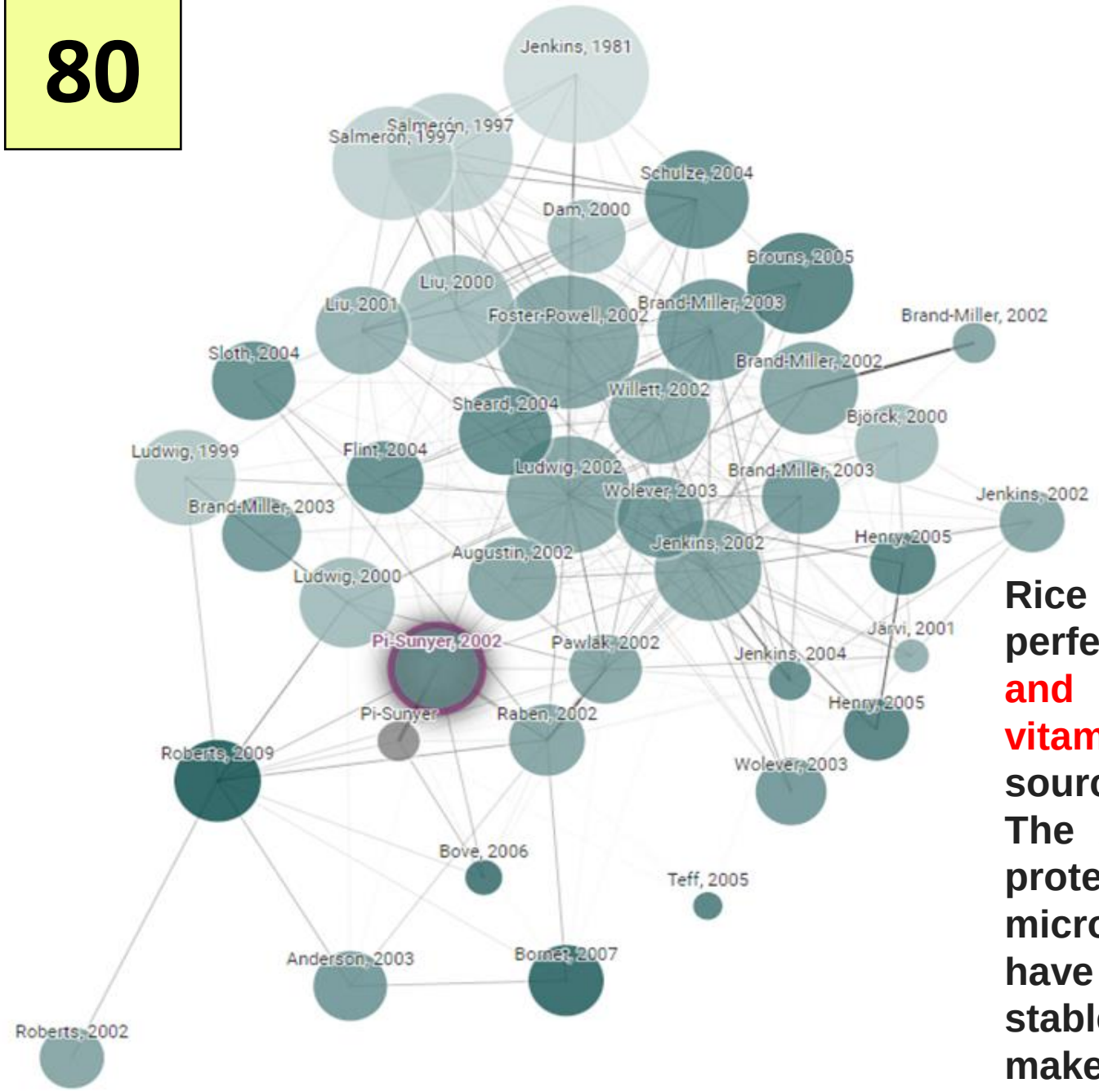
White is a refined version of whole-grain rice removing bran and germ layers which also removes the essential vitamins, minerals, phytonutrients, and fiber content. The high carbohydrate acts as a quick source and gets easily digested leading to energy fluctuations and feelings of hunger. It rapidly increases blood sugar levels when consumed and can lead to a quick spike in insulin, potentially contributing to insulin resistance over time. The high GI value affects effective digestion and insulin secretion.



GI

The wide range of whole grains comprising quinoa, oats, barley, millet, buckwheat, and others are highly nutritious with fiber content, vitamins, minerals such as iron and magnesium, and antioxidants. The compounds contribute to slow digestion and control blood glucose levels, improving cholesterol levels, preventing insulin resistance, and the feeling of fullness. Whole grains have the potential to reduce overall calorie intake slowing the absorption of glucose, helping to regulate blood sugar levels to have a healthy metabolism.

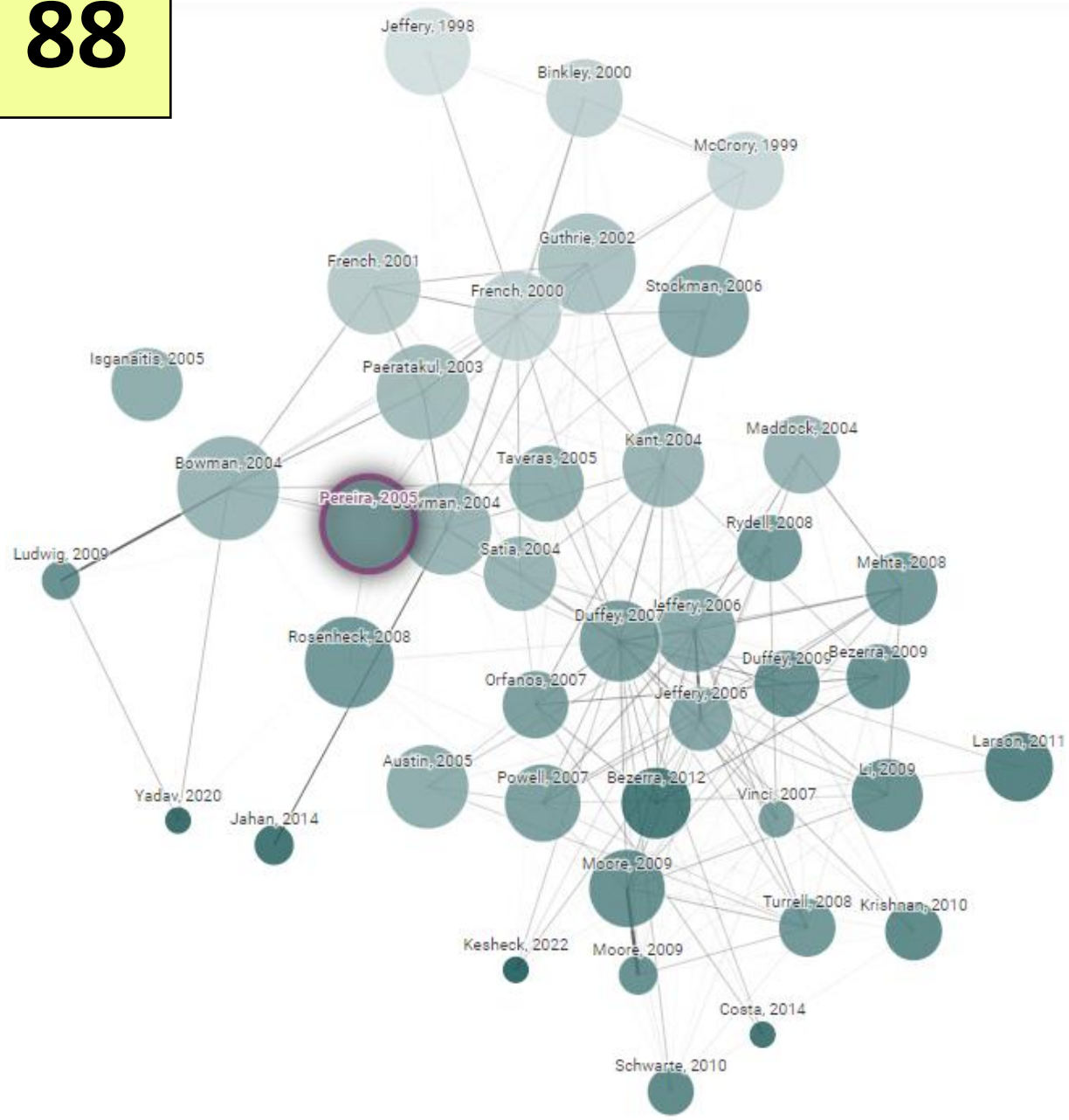
80

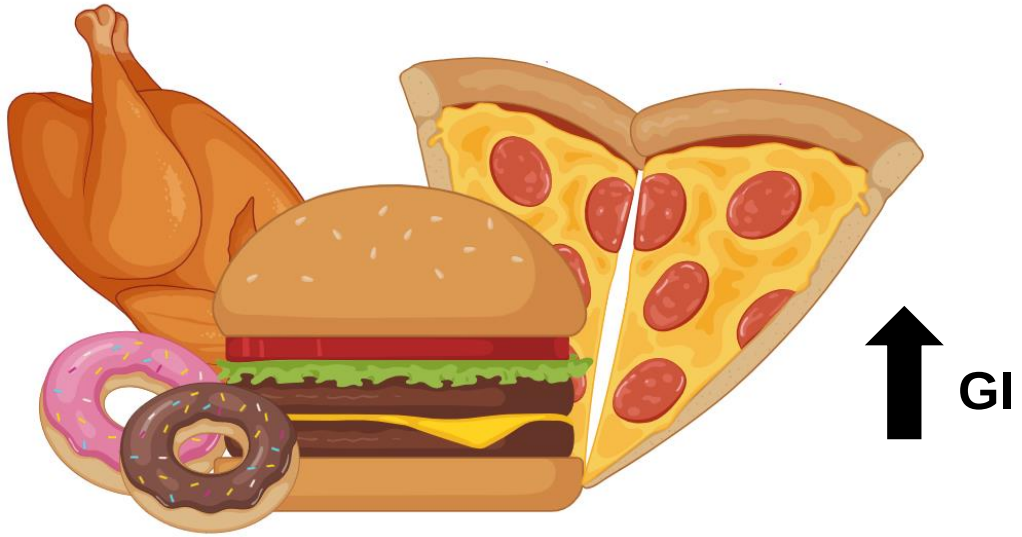


GI

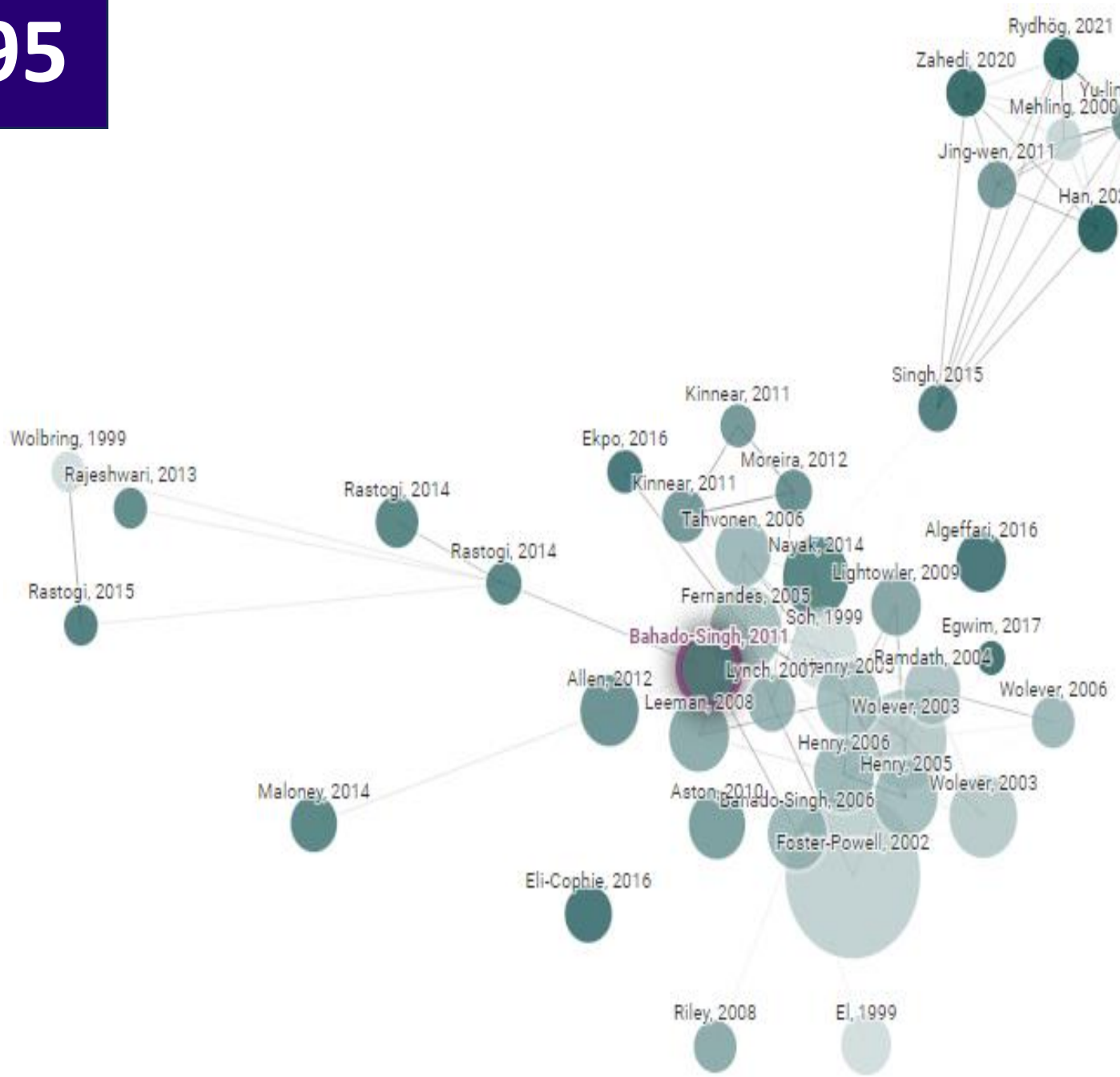
Rice with yogurt is a popular cuisine as it is the perfect amalgamation of carbohydrates, dietary fibers, and antioxidants from rice and protein, calcium, vitamins, minerals, and probiotics from yogurt. The source of rice plays a key role, preferably brown rice. The balanced mix helps in the slower digestion of proteins and carbohydrates, improves the gut microbiota, and improves the immune functioning to have reduced risk of gastrointestinal issues. The stable blood sugar level, satiety, and insulin secretion make it a nutritious meal for diabetic people.

88





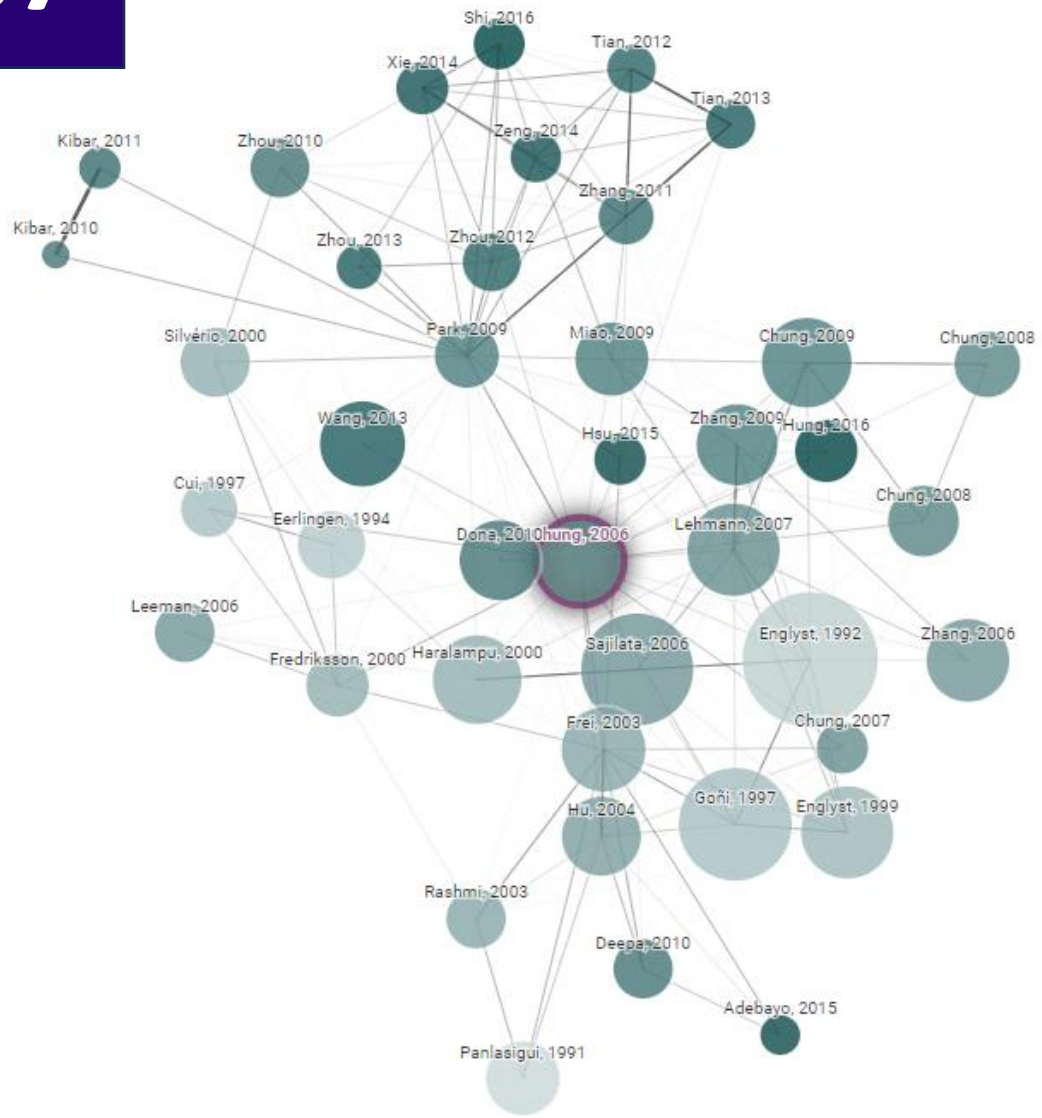
Fast foods are the hub of high calories, added fats, and sugars. They are rich in saturated and trans fats, which can contribute to elevated levels of LDL "bad" cholesterol, high in sodium contributing to high blood pressure, and refined carbohydrates that get readily digested causing a rapid spike in the blood sugar level. This surge triggers the pancreas to release insulin to help cells absorb the glucose for energy, thereby contributing to insulin resistance. The absence of sufficient fiber in fast food can lead to a rapid increase and subsequent drop in blood sugar levels, potentially contributing to feelings of fatigue and hunger.



GI

Fried potatoes are full of high-starch varieties, trans fats, and has acrylamide formed as a result of frying at high temperature. Not only that, water-soluble vitamins, dietary content, and heat sensitive nutrients are lost. Prolonged consumption causes rapid spike in blood sugar level, increased insulin release, fatigue, hunger, and weight gain.

97



GI

Gelatinization is a process in which starches in food absorb water and swell, leading to the thickening of the mixture. This process is often observed in cooking, especially when preparing starchy foods like rice, potatoes, and certain grains. Gelatinization breaks down the structure of starch granules, making them more accessible to digestive enzymes. This increased accessibility means that the body can more rapidly convert the starches into glucose during digestion thus increasing the GI.