Pacific Southwest ROTA-R
EXTENSION College of Agriculture, Biotechnology & Natural Resources

Authors: Anne R. Lindsay, Ph.D. (University of Nevada, Reno Extension)
Heather Norman-Burgdolf, Ph.D. (University of Kentucky-Extension)
Lauren Tovar, R.D., L.D. (University of Nevada, Reno Extension)

Carbohydrates, Fat and Protein in Recovery

Peer-reviewed University of Nevada, Reno FS-24-01

Carbohydrates, fats and protein, known as macronutrients, are essential to development and maintenance of the body, disease prevention, optimal metabolism and overall health and well-being, especially during recovery. Macronutrients are the body's primary source of fuel and are unique in that they provide our body with calories. Calories are the type of energy or fuel the body needs to work and function, like putting gas in a car. Eating enough macronutrients helps the body run the best it can and will provide physical energy.

Macronutrients play a key role in mental health and recovery from substance use.[1] They are essential to improving nutritional status, which can make treatment more effective, while reducing cravings and preventing reoccurrence. In fact, how food affects a person's mood and their risk for using substances begins with macronutrients. People who do not eat enough macronutrients can experience symptoms of depression, anxiety and low energy, all of which can lead someone to start using substances or trigger a reoccurrence.[2] Each macronutrient plays a different role in the body and impacts recovery differently.

Protein

Proteins are an important part of the diet since all chemicals in the brain are protein-based molecules. Amino acids, the building blocks of protein, are the foundation of these chemicals called neurotransmitters and include dopamine and serotonin. Dopamine is made from the amino acid tyrosine, and serotonin is made from the amino acid tryptophan. If an individual lacks either of these amino acids, synthesis of the respective neurotransmitter is disrupted, which can affect mood, aggression and cravings. Without these amino acids, neurotransmitters, particularly dopamine, will be low and can increase these cravings to feel better, as most substances markedly impact the body's dopamine levels. When undergoing detoxification for opiates or heroin, individuals given a combination of amino acids, specifically phenylalanine, tryptophan, tyrosine and glutamine, were observed to have significantly lowered craving for opiates.

Protein-rich foods, especially eaten first thing in the morning and in small quantities throughout the day, help to increase dopamine and other neurotransmitter levels, which improve energy and increase concentration. There are two types of protein, complete and incomplete. Complete proteins provide all essential amino acids the body needs and are found in animal foods, such as red meat, fish, chicken and dairy. Choosing leaner meats can increase protein intake while limiting saturated fat in the diet. Incomplete proteins lack certain essential amino acids the body needs and are generally plant-based protein foods. These foods need to be eaten in certain combinations to ensure someone is taking in all essential amino acids. Examples of combinations include refried beans and tortillas, peanut butter on whole wheat toast, rice and beans, pita bread with hummus, or a bowl of bean-based chili with crackers.

Carbohydrates

Carbohydrates should provide the largest amount of energy for the body. For most people, it is recommended that half or more of our calories should come from carbohydrates. In addition to the grains food group, carbohydrates can be found in the vegetable, fruit and dairy food groups. Understanding carbohydrates in recovery is critical, especially for clients who are concerned about weight gain and often "cut carbs" from their daily intake. This can negatively impact recovery and therapeutic treatment outcomes.

One common reason people use substances, particularly stimulants, is for energy and less fatigue. During abstinence, a person's metabolism can slow down, and neurotransmitters, like dopamine, are also at lower levels, which increases fatigue and causes energy issues. A nutritious diet including adequate carbohydrates is essential during this period. Specifically, "complex" carbohydrates, such as whole grains, whole wheat bread,

pastas, rice, cereals and oatmeal, are important choices that break down slowly in the body and provide energy over a longer period. These foods also contain important vitamins and minerals that help the body use energy found in food. Foods that include "simple" carbohydrates or sugars, such as sodas, donuts, cakes and pastries, usually only provide a quick source of energy with limited nutrients.

Without complex carbohydrates in the diet, blood sugar becomes unstable, and neurotransmitters become disrupted, leading to feelings of frustration and anxiety. These feelings may cause cravings for simple sugars, which temporarily increase blood sugar, creating quick energy, then crashing as the blood sugar drops again. This can lead to cycles of cravings for more sugar, and even alcohol. A diet that regularly incorporates complex carbohydrates, however, can help prevent these cravings by maintaining a steady blood sugar level while providing a variety of nutrients in the diet. During recovery, replacing refined, simple carbohydrates and sweets with whole grains, fruits and vegetables can improve energy and potentially reduce sugar cravings and alcohol.

Carbohydrates also aid in the production of serotonin, the neurotransmitter that facilitates a happy and stable mood. Low serotonin levels lead to sleep problems, irritability and depression. When carbohydrates are eaten, insulin is released to help the body use glucose for energy and allow tryptophan to enter the brain. Vitamins and minerals are also needed to help convert tryptophan into serotonin. Eating enough carbohydrates and foods with tryptophan, such as meat and dairy, helps with these processes.

Finally, eating complex carbohydrates helps people meet their fiber needs found in carbohydrates such as whole grains, fruits, vegetables, beans and lentils. Eating fiber can help to keep blood sugar in the ideal range and lower cholesterol levels. Fiber, along with plenty of water, also helps with constipation and dysregulated appetite, both of which are common for people during detoxification and throughout recovery. Specifically, for individuals in recovery for opioids or opiates, fiber is essential because these drugs paralyze the bowels causing constipation. A diet with adequate fiber can help restore normal bowel function.

Fats (Dietary)

Fats in the diet also provide some energy to the body, supply essential fatty acids, and help absorb and transport important vitamins. Fats also protect organs from injury and help maintain healthy skin and hair.

Too much dietary saturated fat directly influences mood and has been linked to more depressive symptoms, which can increase risk of reoccurrence.[3] Choosing foods high in saturated fat, found in foods such as butter, mayonnaise, pastries, cookies and red meats less often can be beneficial to overall mental health.

On the other hand, dietary unsaturated fat plays a positive role in supporting mental health.[1] Choosing foods that contain unsaturated fats helps the body's stress response since they have anti-inflammatory properties. Unsaturated fats include both monounsaturated and polyunsaturated fatty acids. They are found in vegetable oils such as sunflower, avocado, canola and olive oil, and also in nuts and seeds, and should make up at least two-thirds of the fat in the diet. Promoting a balance of Omega-6 and Omega-3 fatty acids can help improve neurotransmitter signaling and reduce inflammation, which may help with mood and depression.[2] Supplements containing polyunsaturated fatty acids have also been recommended to help reduce anxiety and anger in people who use substances.[4]

A balanced diet is best during recovery

Overall, a nutritious and balanced diet helps normalize brain chemistry and provides sufficient energy and a variety of nutrients during recovery that support both physical and mental health. The focus should not be on a single macronutrient, but rather having quality sources of all of them in the diet, when possible.

REFERENCES

1. Mahboub N, Rizk R, Karavetian M, de Vries N. Nutritional status and eating habits of people who use drugs and/or are undergoing treatment for recovery: a narrative review. *Nutrition reviews*. 2021;79(6):627-635. doi:10.1093/nutrit/nuaa095

2. Kris-Etherton PM, Petersen KS, Hibbeln JR, et al. Nutrition and behavioral health disorders: depression and anxiety. *Nutrition reviews*. 2021;79(3):247-260. doi:10.1093/nutrit/nuaa025

3. Thesing CS, Bot M, Milaneschi Y, Giltay EJ, Penninx BWJH. Omega-3 and omega-6 fatty acid levels in depressive and anxiety disorders. *Psychoneuroendocrinology*. 2018;87:53-62. doi:10.1016/j.psyneuen.2017.10.005

4. Ringgold Inc.. *Dietary reference intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids*. DRIs energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, amino acids. National Academies Press; 2005.