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Short Stature, Fingertips reaching to the level of hips

Frontal bossing, enlargement of head

Star fish hand, Trident hand

Achondroplasia

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GENERAL

Nutraceuticals and brain development

SANJAY AGRAWAL

The potential of food as prophylactic and therapeutic agent versus diseases has now begun to be acknowledged. The fascinating facts have been revealed about, the effect of dietary factors on certain molecular systems and mechanisms that take care of mental activity in recent years. A diet that is high in omega-3 fatty acids is earning accolades for reinforcing cognitive activity in humans and up regulating genes that are vital for sustaining synaptic activity and agility in rodents. Eventually, diets that are rich in saturated fat are turning culprits for lowering molecular scaffolds that help cognitive function and elevating the danger of neurological dysfunction in humans as well as animals. Thus, a combination of nutrition and exercise is recommended to undo these probable ill health outcomes. This is further corroborated by information available in the literature. Nutraceutical is hybrid of nutrition and pharmaceutical and was introduced in 1989 by Stephen L. DeFelice, founder and chairperson of the Foundation of Innovation Medicine, and defined as "Food, or parts of food, that provide medical or health benefits, including the prevention and treatment of disease". Functional foods, according to their generally accepted definition, are "any food or food ingredient that may provide a health benefit beyond the traditional nutrients it contains". Plenty of studies are about fruitful influences of nutraceuticals like antioxidant, mushrooms, vitamins, essential amino acids, phytochemicals, and polyunsaturated fatty acids in pediatric foods upon the budding immune response. There are numerous evidences regarding effect of general physical condition on children's cognitive ability and school performance. The activity of brain is definitely based on appropriate nutrition, and short-term alterations in the quantity and makeup of nutrient intake in healthy individuals affect actions of cognitive processes. It has been observed that consuming breakfast leads to a number of affirmative influences on the cognitive activity of well-fed children. The elevated hormone content and enzyme functions signal towards sensitivity of brain for stress. The high stress circumstances may trigger depression and in adverse manner alter behavioral, learning, and biochemical activities. A mood disorder such as major depression is probable life endangering disease. A sizeable population of patients with depression is reckoned to be treatment resistant even after advancement of pharmacotherapy. The antidepressant drugs suffer from drawbacks such as post compliance side effects or absence of required effect. These findings have ignited the minds of researchers to pursue hunt for natural remedies for improved beneficial effects with no or lesser toxic consequences. The dementia is often manifested by Alzheimer's disease. It causes severe suffering for the patients, in the form of progressive behavioral and neurological changes that include functional impairment, loss of independency, emotional problems, and behavioral disturbances. A high risk of many mental disorders has been observed, such as attention-deficit disorder, dyslexia, dementia, depression, bipolar disorder, and schizophrenia when humans are omega-3 fatty acids deficient. Since the human body is not able to synthesize omega-3 fatty acid docosahexaenoic acid (DHA) that is an important part of neuronal membranes, we have to depend on DHA from dietary sources. The mechanisms underlying DHA's action on brain plasticity and cognition have begun to be explained in recent times. The enhancement of hippocampal brain-derived neurotrophic factor (BDNF) content and increased cognitive process in rodent models of brain trauma are observed during DHA dietary supplementation.

Nutraceutical Fruits for Cognition and Brain Health

Fruits and fruit juice were used for cognition and brain health. Keservani and coworkers reported the use of various fruits for brain health because of medicinal value of fruits. Keservani and Sharma reported the role of vitamin C and polyphenols found in citrus fruits and blueberries in mental performance. Detailed description of blackberries, blueberries, strawberries, raspberries, cherries, oranges, plums, prunes, red grapes, and pomegranates fruits is mentioned in the following sections. The numerous phytochemicals occurring in these fruits and their structures are depicted under Blackberries. Several species in the Rubus genus of Rosaceae family, hybrids of these species in the Rubus subgenus, and hybrids between the

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Rubus and Idaeobatus subgenera provide blackberry which is an edible fruit. Blackberries are noteworthy; as these possess rich nutritional amounts of dietary fiber, vitamin C, and vitamin K. Blackberries contain soluble as well as insoluble fiber. The half of the daily recommended dose of vitamin C may be provided by 1 cup of blackberries (144 g) which contain a mean of 7.6 g of fiber. By virtue of having high polyphenol and anthocyanin content (often collectively known as phytochemicals) red and dark colored berries offer health benefits which are documented too. Nevertheless, researchers around the globe persist to express interest in this region. There has been initial research with focus on the phytochemical makeup of new and much exotic fruits and their comparison with known relatives, berries. A review written by Dr. Miller and Shukitt-Hale of the United States Department of Agriculture (USDA) human nutrition center at Tufts University proposes that intake of blueberries, strawberries, blackberries, and other berry fruits has a valuable effect on the brain and could assist in checking age-linked memory loss and other alterations. The group pleads that the berries possess neuroactive phytochemicals that act as antioxidants as well as anti-inflammatory agents. Berries are famous for their accrual of antioxidant parts (mostly polyphenols, carotenoids, and vitamin C) and for being the fruits offering maximum antioxidant capacity in usually consumed foods. Total polyphenol concentration may also differ at large between berry species and varieties and under different growing environments. Often black currant, raspberry, and strawberry contain total polyphenol amounts in the range of 300–1000 mg/100 g. Besides, the amounts of these antioxidant substances may be hugely affected by postproduction handling and processing; therefore, their content must be authenticated in any product. Recently the role of polyphenol contents in berry as neuroprotective has been documented. The berry ingredients are suggested to guard against damage caused by reactive oxygen species (ROS), which are identified to have role in the progress of neurological conditions like Alzheimer's disease. An improvement in indices of neuronal process in aged rats was observed upon dietary supplementation with blueberry, cranberry, or black currant fruit for eight weeks. 2.2. Blueberries. Blueberries are perennial flowering plants having indigo colored berries of the section Cyanococcus in the genus Vaccinium (a genus that covers cranberries, bilberries, and gooseberries). Species in the section Cyanococcus are the usual fruits advertised as blueberries and are inhabitant to North America (commercially grown high-bush blueberries were not launched in Europe until the 1930s).

In general, water (84%), carbohydrates (9.7%), proteins (0.6%), and fat (0.4%) are principal ingredients of a fresh blueberry. A serving of fresh blueberries (100 g) is approximated to provide energy amounting to about 192 kJ. Blueberries offer a nice supply of dietary fiber that makes 3–3.5% of its weight. In addition to the taste, the chief attention in this fruit is because of the fair vitamin C content, as 100 g of blueberries offers, on average, 10 mg of ascorbic acid, which equals 1/3 of the daily recommended intake [35, 36]. More recently, studies addressing the effects of other flavonoid subgroups on human cognition have indicated that both blueberry anthocyanins and cocoa flavanols promote positive effects on cognitive outcomes, especially in aged populations. For example, cocoa flavanols (520–994 mg of total cocoa flavanols) have been shown to enhance cognitive and visual function in healthy young volunteers within 2 h of intake, specifically in highly effortful/demanding tasks. On the other hand, long-term supplementation (3 months) with blueberry juice in grown-up adults with slight cognitive destruction yielded working memory improvements and further reduced depressive symptoms. An improved short-term cognitive action with high flavonoid fruit juices, including blueberry juice, was observed in a few trials in geriatric population (≤15 participants). Corroborating these results, berries are in particular rich in a subclass of flavonoids known as anthocyanidins, which can cross the blood brain barrier and concentrate in regions of learning and memory (e.g., hippocampus) .

Strawberries. The garden strawberry (or simply strawberry; Fragaria ananassa) is a broadly grown crossbreed species of the genus Fragaria (altogether called as the strawberries). The garden strawberry was at first reared in Brittany, France, in the 1750s through a cross of Fragaria virginiana from eastern North America.

Raspberries. The raspberry is the edible fruit of a large number of plant species in the genus Rubus of the rose family, majority of which are in the subgenus Idaeobatus; the nomenclature is also applicable to such plants themselves. The hybrids between R. idaeus and R. strigosus are commercially employed to get red raspberry nowadays. Purple

raspberries have been cultivated by horticultural cross of red and black raspberries and have been present in the wild.

Cherries. The cherry fruits possessing market value are often procured from restricted types of sources like varieties of the sweet cherry, Prunus avium. Several cherries fall under subgenus Cerasus, which is demarcated by bearing the flowers in tiny corymbs of many in groups (neither alone nor in racemes) and by possessing even fruit having only a faint furrow either with side or without groove. Majority of edible cherries are obtained either from Prunus avium, the sweet cherry (also known as wild cherry), or from Prunus cerasus, the bitter cherry.

Oranges. Oranges are the most famous citrus harvests and make up 75% of all cultivated citrus fruits. The "Queen" orange [Citrus sinensis (L.) Osb] is cultivated at large scale in Iran. This breed of orange is midseason, of red color, rich in dissolved solids, high in flavor, and seedless to some extent and bears fruits on the tree in a robust manner. The tree is strong, extremely prolific, and immune towards cold.

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Staging of type 1 diabetes

	Stage 1	Stage 2	Stage 3
Stage	▪ Autoimmunity ▪ Normoglycemia ▪ Presymptomatic	▪ Autoimmunity ▪ Dysglycemia ▪ Presymptomatic	▪ New-onset hyperglycemia ▪ Symptomatic
Diagnostic criteria	▪ Multiple autoantibodies ▪ No IGT or IFG	▪ Multiple autoantibodies ▪ Dysglycemia: IFG and /or IGT ▪ FPG 100 – 125 mg/dL (5.6 – 6.9 mmol/L) ▪ 2-h PG 140 – 199 mg/dl (7.8 – 11.0 mmol/L) ▪ A1c 5.7% - 6.4% (39-47 mmol/mol) or ≥ 10% increase in A1c	▪ Clinical Symptoms ▪ Diabetes by standard criteria

IGT: Impaired glucose tolerance: IFG: Impaired fasting glucose; FPG: Fasting plasma glucose; PG: Plasma glucose; A1C: Glycosylated hemoglobin.

Needle fragment embolism is a rare complication of IV drug use. Patients with retained needle fragments may seek medical care hours or days after needle embolization or penetration, or they many remain asymptomatic for many years, often presenting a diagnostic dilemma until an appropriate imaging modality is employed and the foreign body is visualized.

- Reality Bytes

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