Elevated Nitrogen In Blood

Phenylacetylglutamine Elevated levels of nitrogen in the blood increase the amount Phenylacetylglutamine is a product formed by the conjugation of phenylacetate and glutamine. It is a common metabolite that occurs naturally in human urine. conjugated by free-plasma in the kidney to remove excess nitrogen through its excretion in the urine 25b085f9c8

== Definition == 25b085f9c8 == Five-membered heterocyclic amines == 25b085f9c8 The nitrogen cycle is of particular interest to ecologists because nitrogen availability can affect the rate of key ecosystem processes, including primary production and decomposition. Human activities such as fossil fuel combustion, use of artificial nitrogen fertilizers, and release of nitrogen in wastewater have dramatically altered the global nitrogen cycle. Human modification of the global nitrogen cycle can negatively affect the natural environment system and also human health. 25b085f9c8

Human impact on the nitrogen cycle Human impact on the nitrogen cycle is diverse. This is largely attributed to the widespread use of synthetic fertilizers produced via the Haber-Bosch process, and the expansion of fossil fuel combustion following the Industrial Revolution. As a consequence of anthropogenic inputs, the global nitrogen cycle has been significantly altered over the past century, leading to increased nitrogen deposition and disruption of natural biogeochemical processes. An additional 12% of emissions arise from other anthropogenic activities including fossil fuel combustion, industrial processes, waste and wastewater treatment, and biomass burning. Agricultural and industrial nitrogen (N) inputs to the environment currently exceed inputs from natural N fixation. Global atmospheric nitrous oxide (N2O) mole fractions have increased from a pre-industrial value of ~270 nmol/mol to ~319 nmol/mol in 2005, a concerning trend given that N2O is both a greenhouse gas and an ozone-depleting substance (ODS). Human activities account for over one-third of N2O emissions (35% of total global N2O emissions), with about 20% originating from agricultural sources such as fertilizer use, manure management, and aquaculture. Agricultural and industrial nitrogen (N) inputs to the environment currently exceed inputs from natural Human impact on the nitrogen cycle is diverse 25b085f9c8

Heterocyclic amine , pyridine), though compounds exist in which this is not the case (e. g. (March 2008). Typically it is a nitrogen atom of an amine group that also makes the ring heterocyclic (e. g. , the drug zileuton). Some well known heterocyclic amines are niacin (vitamin B3), nicotine (psychoactive alkaloid and recreational drug), and the nucleobases that encode genetic information in DNA. "Elevated blood harmane (1-methyl-9H-pyrido[3,4-b]indole) concentrations in essential tremor". 29 Heterocyclic amines, also sometimes referred to as HCAs, are chemical compounds containing at least one heterocyclic ring, which by definition has atoms of at least two different elements, as well as at least one amine (nitrogen-containing) group. Carcinogenic heterocyclic amines are created by high temperature cooking of meat and smoking of plant matter like tobacco. Neurotoxicology. The biological functions of heterocyclic amines vary, including vitamins and carcinogens. Pellegrino KM, et al 25b085f9c8

== Processes == 25b085f9c8 Nitrogen dioxide is poisonous and can be fatal if inhaled in large quantities. Cooking with a gas stove produces nitrogen dioxide which causes poorer indoor air quality. Combustion of gas can lead to increased concentrations of nitrogen dioxide throughout the home environment which is linked to respiratory issues and diseases. The LC50 (median lethal dose) for humans has been estimated to be 174 ppm for a 1-hour exposure. It is also included in the NOx family of atmospheric pollutants. 25b085f9c8 == Properties == 25b085f9c8 The

highly-nitrogenous compound is most commonly encountered in human subjects with urea cycle disorders. Conditions such as uremia or hyperammonemia tend to cause high levels of nitrogen in the form of ammonia in the blood. Uremic conditions are a result of defects in enzymes that convert ammonia to urea: the primary nitrogenous waste metabolite in the urea cycle. 25b085f9c8 Nitrogen dioxide is a reddish-brown gas with a pungent, acrid odor above 21.2 °C (70.2 °F; 294.3 K) and becomes a yellowish-brown liquid below 21.2 °C (70.2 °F; 294.3 K). It forms an equilibrium with its dimer, dinitrogen tetroxide (N_2O_4), and converts almost entirely to N_2O_4 below −11.2 °C (11.8 °F... 25b085f9c8 == Characteristics == 25b085f9c8 Urea and creatinine are nitrogenous end products of metabolism. Urea is the primary metabolite derived from dietary protein and tissue protein turnover. Creatinine is the product of muscle creatine catabolism. Both are relatively small molecules (60 and 113 daltons, respectively) that distribute throughout total body water. In Europe, the whole urea molecule is assayed, whereas in the United States only... 25b085f9c8 The IUPAC has called it Group 15 since 1988. Before that, in America it was called Group VA, owing to a text by H. C. Deming and the Sargent-Welch Scientific Company, while in Europe it was called Group VB, which the IUPAC had recommended in 1970. (Pronounced "group five A" and "group five B"; "V" is the Roman numeral 5.) In semiconductor physics, it is still usually called Group V. The "five" ("V") in the historical names comes from the "pentavalency" of nitrogen, reflected by the stoichiometry of compounds such as N_2O_5. They have also been called the pentels. 25b085f9c8 Phenylacetylglutamine is the primary metabolite of the degradation of phenylacetate when in the presence of glutamine in the liver. It is also produced in higher concentrations in the body through the metabolic degradation pathway of the pharmaceutical compounds sodium phenylbutyrate, glycerol phenylbutyrate, and sodium phenylacetate, considered more toxic, that are used as treatments for the physiological dysfunction in urea cycling. 25b085f9c8 == Types == 25b085f9c8 Measurements of urea and creatinine (Cr) in the blood are used to assess renal function. For historical reasons, the lab test measuring urea is known as "blood urea nitrogen" (BUN) in the US. The BUN:Cr ratio is a useful measure in determining the type of azotemia and will be discussed in each section below. A normal BUN:Cr is equal to 15. 25b085f9c8 Nicotine is a molecule containing a pyrrolidine ring attached to a ring of pyridine (other heterocyclic amine). Nicotine belongs to a group of compounds known as alkaloids... 25b085f9c8

Nitrogen cycle The conversion of nitrogen can be carried out through both biological and physical processes. The conversion of nitrogen can be carried out through both biological and physical processes. However, atmospheric nitrogen has limited availability for biological use, leading to a scarcity of usable nitrogen in many types of ecosystems. Important processes in the nitrogen cycle include fixation, ammonification, nitrification, and denitrification. Important processes in the nitrogen cycle include fixation The nitrogen cycle is the biogeochemical cycle by which nitrogen is converted into multiple chemical forms as it circulates among atmospheric, terrestrial, and marine ecosystems. The majority of Earth's atmosphere (78%) is atmospheric nitrogen, making it the largest source of nitrogen 25b085f9c8

Urea-to-creatinine ratio In the United States, both quantities are given in mg/dL. The ratio may be used to determine the cause of acute kidney injury or dehydration. 14). In Europe, the whole urea molecule is assayed, whereas in the United States only the nitrogen component of urea (the blood or serum urea nitrogen, i In medicine, the urea-to-creatinine ratio (UCR), known in the United States as BUN-to-creatinine ratio, is the ratio of the blood levels of urea (BUN) (mmol/L) and creatinine (Cr) (µmol/L). BUN only reflects the nitrogen content of urea (MW 28), while urea measurement reflects the whole of the molecule (MW 60); urea is just over twice BUN (60/28 = 2 25b085f9c8

Pnictogen Group 15 is also known as the nitrogen group or nitrogen family. Group 15 consists of the elements nitrogen (N) A pnictogen (; from Ancient Greek πνίγω (pnígō) 'to choke' and -gen 'generator') is any of the chemical elements in group 15

of the periodic table. Group 15 consists of the elements nitrogen (N), phosphorus (P), arsenic (As), antimony (Sb), bismuth (Bi), and moscovium (Mc). Group 15 is also known as the nitrogen group or nitrogen family. elements in group 15 of the periodic table 25b085f9c8

The compound pyrrolidine is composed of molecules that contain a saturated ring of five atoms. This cyclic structure is composed of one atom of nitrogen and four carbon. 25b085f9c8 Mutations in the ASL gene cause... 25b085f9c8 Occasionally, an individual may inherit a mild form of the disorder in which ammonia accumulates in the bloodstream only during periods of illness or other stress. 25b085f9c8 Phenylbutyrate is beta-oxidized into phenylacetate which is conjugated with glutamine in the liver and excreted by the kidney. Phenylacetylglutamine is the product of uremic conditions that require an alternative pathway... 25b085f9c8 Except for helium and presumably neon, all gases that can be breathed have a narcotic effect, although widely varying in degree. The effect is consistently greater for gases with a higher lipid solubility, and although the mechanism of this phenomenon is still not fully clear, there is good evidence that the two properties are mechanistically related. As depth increases, the mental impairment may become hazardous. Divers can learn to cope with some of the effects of narcosis, but it is impossible to develop a tolerance. Narcosis can affect all ambient pressure... 25b085f9c8 == Metabolism == 25b085f9c8 An infant with argininosuccinic aciduria may seem lethargic or be unwilling to eat, have poorly controlled breathing rate or body temperature, experience seizures or unusual body movements, or go into a coma. Complications from argininosuccinic aciduria may include developmental delay and mental retardation. Progressive liver damage, skin lesions, and brittle hair may also be seen. Immediate treatment and lifelong management (following a strict diet and using appropriate supplements) may prevent many of these complications. 25b085f9c8

Azotemia It is largely related to insufficient or dysfunctional filtering of blood by the kidneys. creatinine, and other nitrogen-rich compounds) in the blood. It is largely related to insufficient or dysfunctional filtering of blood by the kidneys. It Azotemia (from azot 'nitrogen' and -emia 'blood condition'), also spelled azotaemia, is a medical condition characterized by abnormally high levels of nitrogen-containing compounds (such as urea, creatinine, and other nitrogen-rich compounds) in the blood. It can lead to uremia and acute kidney injury if not controlled 25b085f9c8

== Genetics == 25b085f9c8

Nitrogen narcosis Nitrogen narcosis (also known as narcosis while diving, inert gas narcosis, raptures of the deep, Martini effect) is a reversible alteration in consciousness Nitrogen narcosis (also known as narcosis while diving, inert gas narcosis, raptures of the deep, Martini effect) is a reversible alteration in consciousness that occurs while diving at depth. It can occur during shallow dives, but does not usually become noticeable at depths less than 30 metres (98 ft). The Greek word νάρκωσις (narkōsis), "the act of making numb", is derived from νάρκη (narkē), "numbness, torpor", a term used by Homer and Hippocrates. It is caused by the anesthetic effect of certain gases at high partial pressure. Narcosis produces a state similar to drunkenness (alcohol intoxication), or nitrous oxide inhalation 25b085f9c8

The principle behind this ratio is the fact that both urea (BUN) and creatinine are freely filtered by the glomerulus; however, urea reabsorbed by the renal tubules can be regulated (increased or decreased) whereas creatinine reabsorption remains the same (minimal reabsorption). 25b085f9c8 Azotemia has three classifications, depending on its causative origin: prerenal azotemia, renal azotemia, and postrenal azotemia. 25b085f9c8

Argininosuccinic aciduria Bachmann Argininosuccinic aciduria is an inherited disorder

that causes the accumulation of argininosuccinic acid (also known as "ASA") in the blood and urine. occurs in approximately 1 in 70,000 live births. Argininosuccinic aciduria may become evident in the first few days of life because of high blood ammonia, or later in life presenting with "sparse" or "brittle" hair, developmental delay, and tremors. Some patients may also have an elevation of ammonia, a toxic chemical, which can affect the nervous system. Many patients can now be detected on the newborn screen if their blood citrulline is elevated 25b085f9c8

Nitrogen dioxide concentrations. Industrially, NO2 is an intermediate in the synthesis of nitric acid, millions of tons of which are produced each year, primarily for the production of fertilizers. At elevated temperatures nitrogen combines with oxygen to form nitrogen dioxide: N2 Nitrogen dioxide is a chemical compound with the formula NO2. One of several nitrogen oxides, nitrogen dioxide is a reddish-brown gas. It is a paramagnetic, bent molecule with C2v point group symmetry. Nitrogen dioxide also forms in most combustion processes. It is a free radical 25b085f9c8