

Free research paper on acid, base and salt

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Substance that ionizes in aqueous solution to produce hydrogen ion (H^+) is defined as acid. It is proton donor and electron pair acceptor. Acid tastes sour, changes litmus from blue to red. Whereas, base releases hydroxyl ion (OH^-) in their aqueous solution. It is proton acceptor and electron pair donor. It tastes bitter; changes red (acidified) litmus to blue. Salt is an ionic compound produced from reaction of an acid and a base. It is formed by the incomplete or complete substitution of the hydrogen ion (H^+) of an acid by a basic radical.

Three examples of acid used in therapeutic purpose are Aspirin (acetyl salicylic acid), Phenobarbital, and Alpha-Lipoic Acid. Three examples of base used in therapeutic purpose are Diphenhydramine (Benadryl), Tetracycline and magnesium hydroxide (Milk of magnesia). Three examples of salt used in therapeutic purpose are sodium fluoride, Sodium Naproxyn and Penicillin G Potassium.

Alpha-Lipoic Acid has wide application in therapeutic process. According to Packer. L (1995), " It also fights free radical damage in both fatty and watery regions of cells. " (p. 227-50). It protects liver from alcohol damage, lungs from smoke and it has an important role in controlling blood sugar. It is therapeutically utilized in chemical hypersensitivity syndrome, heavy metal toxicity, diabetic neuropathy, chronic aggressive hepatitis. Moreover, this acid has potential for use in cancer therapy. Tetracycline, available in pill, capsule and liquid form, is a broad-spectrum antibiotic and is therapeutically used to treat infections such urinary tract or sinus infections. It is also used as a preventative in patients prone to acne. Angiogenesis is the formation of new blood vessels and it occurs in some diseases including rosacea and

malignant processes (eg, cancer). Tetracycline inhibits angiogenesis.

Penicillin G Potassium is therapeutically used to treat various types of bacterial infections, to prevent infection of the heart in patients with certain heart diseases who are having surgery. This medication is known as a natural penicillin antibiotic. It inhibits growth of bacteria.

A Buffer is an aqueous solution having highly stable pH and it is prepared by mixing weak acid with its conjugate base or a weak base with its conjugate acid. If acid or base is added to a buffered solution its pH remains almost same. So it helps to prevent pH of any solution from changing severely. After mixing large volume of a weak acid or base with its conjugate, they can remain in solution without neutralizing each other. While hydrogen ion is added to a buffer it is neutralized by the base in buffer and added hydroxide ion is neutralized by acid, but this neutralization reaction does not hamper overall pH of buffer solution.

Aspirin is prepared from a carboxylic acid called acetylsalicylic acid. Rather, it is a product of the reaction of an organic acid and an alcohol or phenol. It is also known as acetylsalicylic acid or acetyl ester. This Ester passes through acidic environment of stomach and reaches into alkaline environment of intestine where pain reliever salicylate ion is absorbed. But stomach being very acidic, some of ester re-converted back into original acid. So buffered aspirin is introduced and buffering agent like magnesium oxide or CaCO_3 is added to the aspirin to neutralize some excess stomach acid. The buffering agent contained in buffered aspirin is used to maintain pH of the aspirin when it is exposed to stomach. Aspirin not being absorbed in

stomach, main objective of buffering agent is to maintain pH of the aspirin until it is absorbed into the small intestine.

Reference:

- Drugs & Medications - penicillin G potassium Inj. Retrieved from <http://www.webmd.com/drugs/drug-5850-penicillin+G+potassium>
- Packer, L. (1995). Alpha-lipoic acid as a biological antioxidant. *Free Radical Biol & Med.*, 19(2), 227-250.
- Sapadin and Fleischmajer. (2006). *J Am Acad Dermatol*, 54, 258 -262.