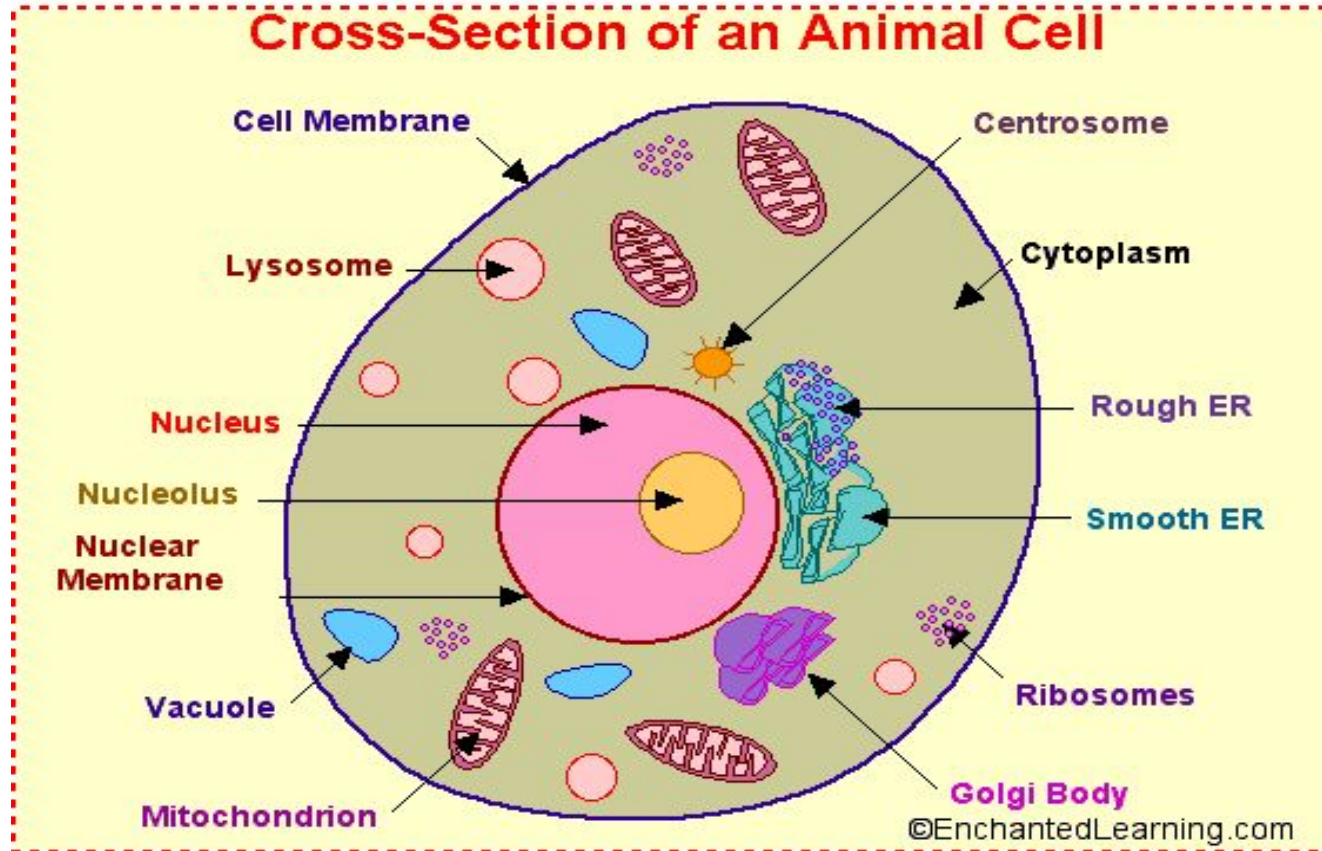


Quats Splash 2025

typical cartoon cell



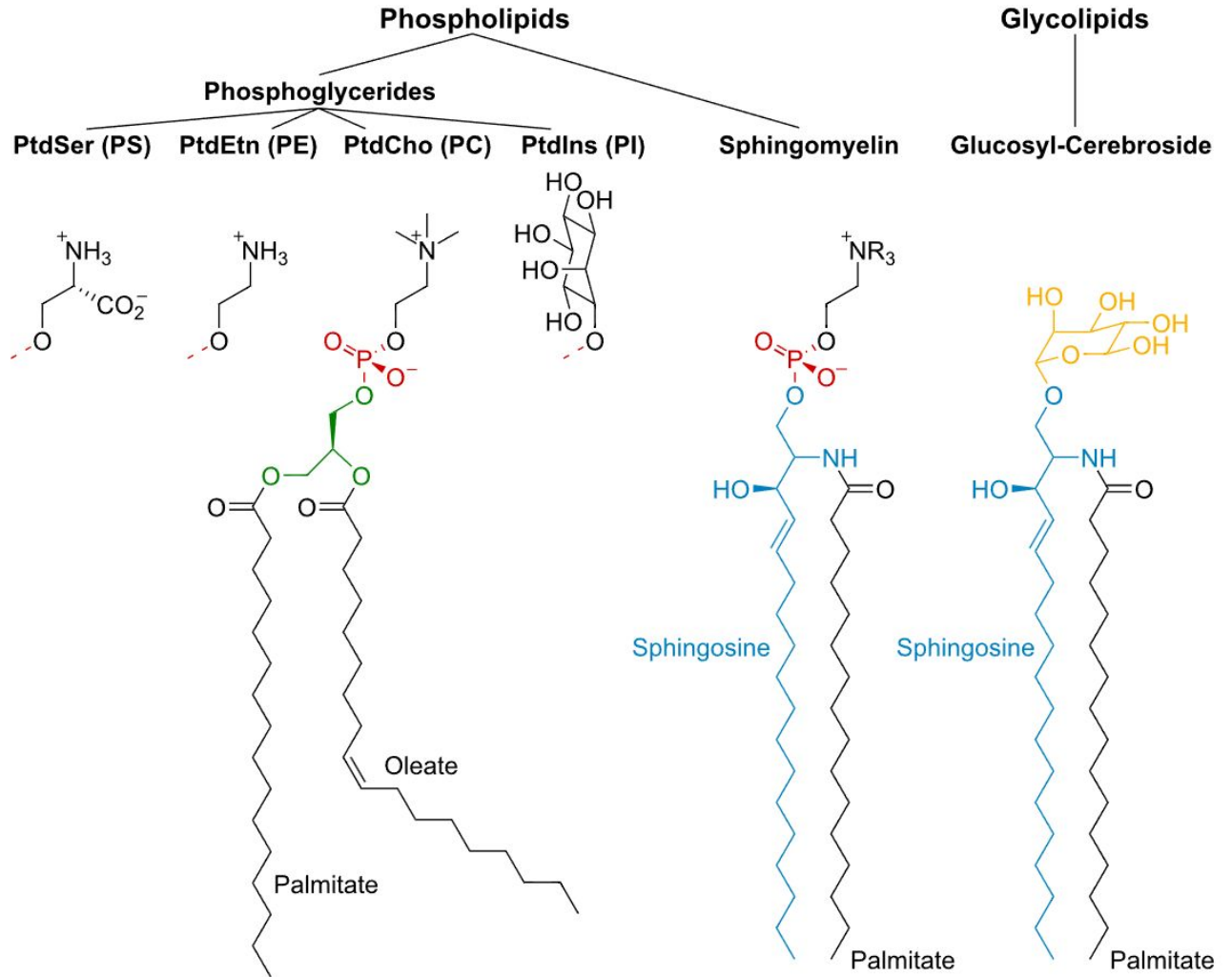
phospholipids

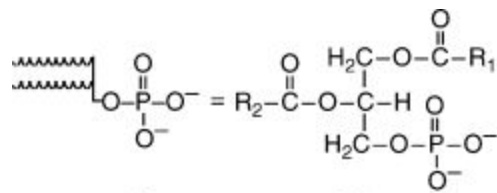
Phosphatidyl-serine

-Ethanolamine

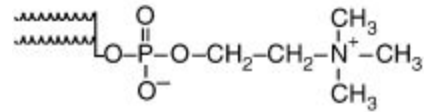
-Choline

-inositol

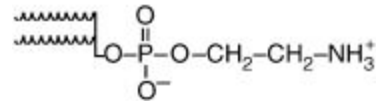




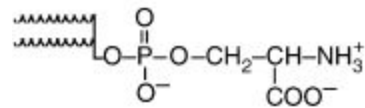
Phosphatidate



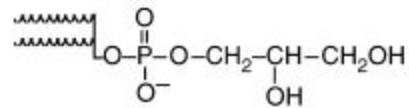
Phosphatidylcholine



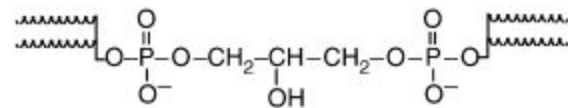
Phosphatidylethanolamine



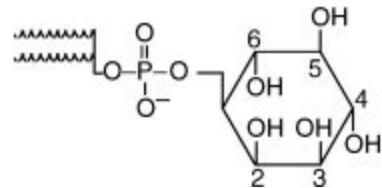
Phosphatidylserine



Phosphatidylglycerol



Cardiolipin

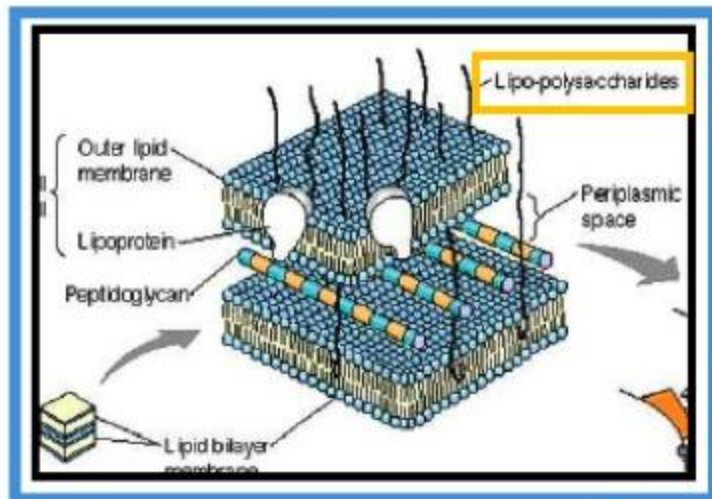


Phosphatidylinositol

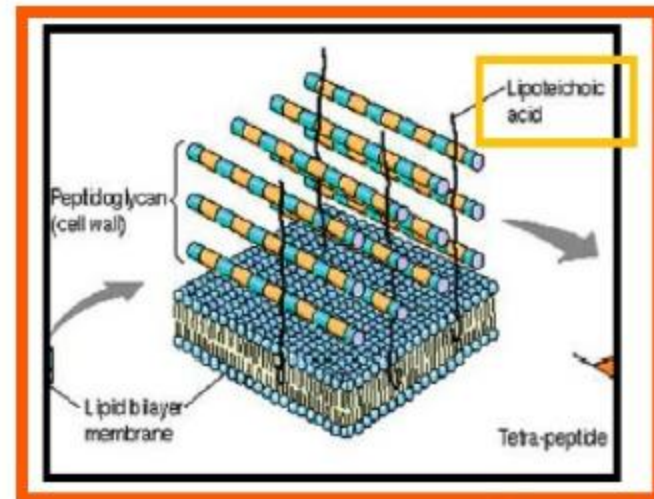
Cell membrane

<https://www.ncbi.nlm.nih.gov/books/NBK9898/>

Gram-negative bacteria



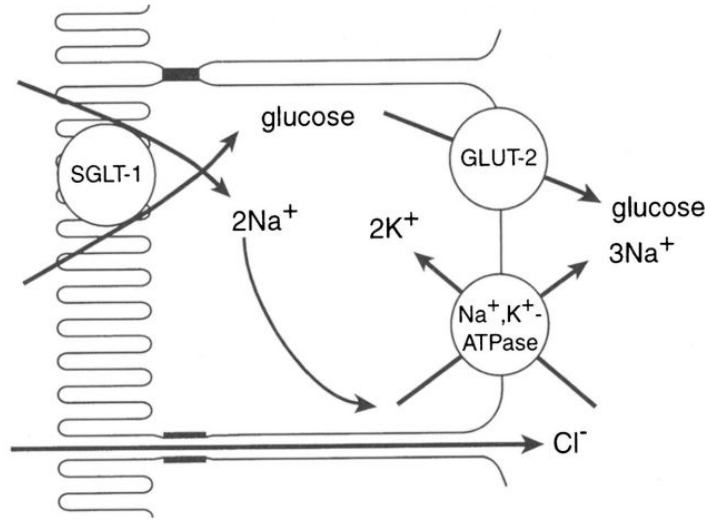
Gram-positive bacteria



Gatorade

<https://pubmed.ncbi.nlm.nih.gov/2187608/>

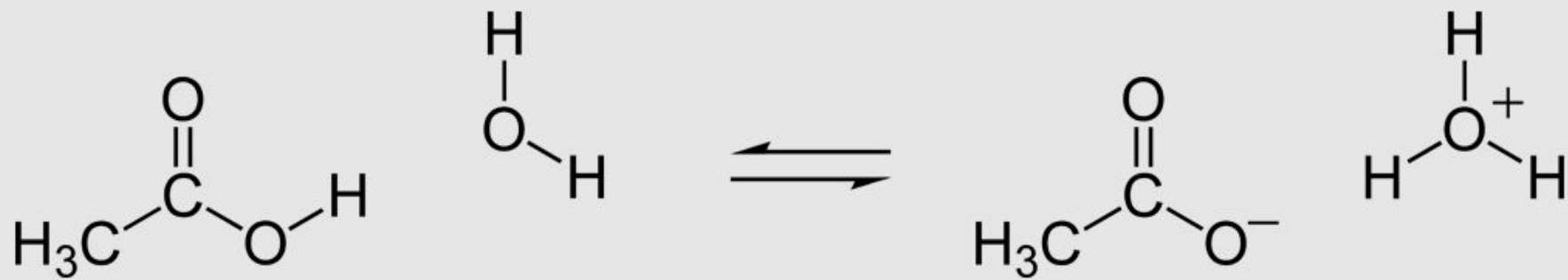
Fig. 1 Unlike the nutrient-independent sodium absorption of intestinal epithelial cells which is compromised in diarrheal disease, the sodium-glucose transporter type 1 (SGLT1) is retained and mediates transport of glucose against its concentration gradient by coupling it to sodium transport. The resultant electropositive gradient achieves electrochemical equilibrium by transport of negative chloride ions. The subsequent NaCl is electroneutral but creates an osmotic gradient leading to water absorption to achieve osmotic neutrality



Osmotic Laxatives

PEG Polyethylene glycol -miraLAX

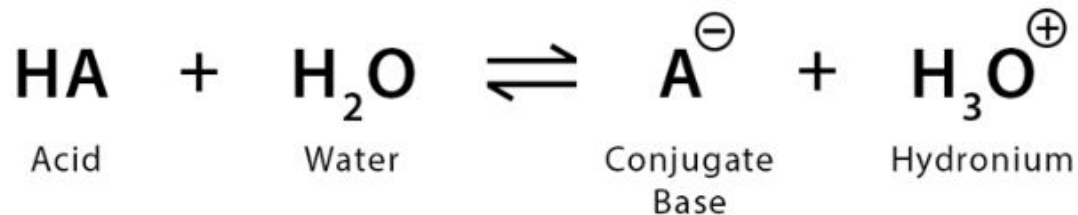
Magnesium -Mg citrate, Mg hydroxide,



Henderson Hasselbalch Equation

pH pKa

Dissociation of an Acid



Equation

$$\text{pH} = \text{pK}_a + \log_{10} \frac{[\text{A}^{\ominus}]}{[\text{HA}]}$$

pH : pH value of the solution

K_a : Dissociation constant of the acid

$[\text{A}^{\ominus}]$: Concentration of the conjugate base (A^{\ominus})

$[\text{HA}]$: Concentration of the acid (HA)

Used as directed at 200 to 400 ppm concentration in waters up to 500 ppm of hardness calculated as CaCO₃, this product is effective against the following pathogenic organisms in 60 seconds:

Community Associated Methicillin Resistant *Staphylococcus aureus* (CA-MRSA), *Escherichia coli*, *Escherichia coli* 0157:H7, HIV-1 (AIDS Virus), *Listeria monocytogenes*, *Staphylococcus aureus*, *Shigella dysenteriae*, and *Yersinia enterocolitica*.

STERAMINE sanitizing solutions of 200 to 400 ppm concentration may be used on food processing equipment, utensils and other food contact articles and surfaces as specified under 40 CFR 180.940 of the US Environmental Protection Agency.

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

WARNING: Tablet dust causes substantial but temporary eye injury. Do not get dust in eyes, on skin or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Tablets may be harmful if swallowed.

FIRST AID

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses if present after first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

IF ON SKIN: Rinse immediately with water for 15-20 minutes. If irritation persists, call poison control center or doctor for treatment advice.

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by poison control center doctor. Do not give anything by mouth to an unconscious person. Have the product label or container with you when calling a poison control center or doctor, or going for treatment.

STORAGE AND DISPOSAL. Do not contaminate water, food or feed by storage and disposal. Store in original container in areas inaccessible to persons unfamiliar with its use. Nonrefillable container. Do not reuse or refill this container. Triple rinse promptly after emptying. Offer empty container for recycling if available or discard in trash. Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.
511-1011

www.sanitize.com

STERAMINE™

1-G Tablets

The Multi-Purpose Sanitizer



FOR SANITIZING FOOD CONTACT SURFACES

USE ONE TO TWO TABLETS PER 1 GALLON OF WATER

Kills HIV-1 (AIDS Virus) and Community Associated Methicillin Resistant *Staphylococcus aureus* (CA-MRSA) when used as directed for sanitizing.

EPA REG. No. 1561-11 EPA EST. No. 1561-VA-1

ACTIVE INGREDIENT: Quaternary Alkyl (C14 95%, C12 3%, C16 2%) dimethyl benzyl ammonium chloride dihydrate	50%
OTHER INGREDIENTS	50%
TOTAL	100%

KEEP OUT OF REACH OF CHILDREN WARNING

See left panel for additional precautionary statements.
For Institutional and Commercial use only.

NET WEIGHT
8 OUNCES

Manufactured by

EDWARDS-COUNCILOR CO. INC., 1427 Baker Road, Virginia Beach, VA 23465

150
Tablets

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Prepare sanitizing solutions with warm water. Allow several minutes for tablets to dissolve before using.

FOR SANITIZING DISHES, GLASSES, AND UTENSILS IN RESTAURANTS, TAVERNS, AND OTHER PUBLIC EATING PLACES.

1. Scrape and prewash utensils and glasses whenever possible.
2. Wash with a good detergent or compatible cleaner in first sink compartment.
3. Rinse with clean water in second sink compartment.
4. Sanitize in a solution of 1 to 2 TABLETS per 1 GALLON OF WATER (200 to 400 ppm) in third sink compartment. Immerse all utensils for at least one minute or for contact time specified by governing sanitary code.
5. Place sanitized utensils on a rack or drainboard to air dry.
6. A fresh sanitizing solution must be prepared at least daily or more often if the solution becomes diluted or soiled.

DIRECTIONS FOR SPRAYING

FOR SANITIZING FOOD PROCESSING EQUIPMENT, DAIRY EQUIPMENT, SINKS, COUNTERTOPS, REFRIGERATED STORAGE AND DISPLAY EQUIPMENT AND OTHER HARD NON-POROUS FOOD CONTACT ARTICLES AND SURFACES.

1. Wash and rinse all articles and surfaces thoroughly.
2. Apply a solution of 200 to 400 ppm concentration by combining 1 or 2 tablets per gallon of warm water, allowing several minutes for tablets to dissolve completely before using. Spray with hand trigger sprayer or wipe on and allow surface to remain wet for at least one minute followed by adequate draining and air drying.

SPECIAL INSTRUCTIONS FOR CLEANING AND DECONTAMINATION AGAINST HIV OF SURFACES/OBJECTS SOILED WITH BLOOD/BODY FLUIDS

Personal Protection: The specific barrier protection items to be used when handling items soiled with blood or body fluids are disposable gloves, gowns, masks and eye coverings.

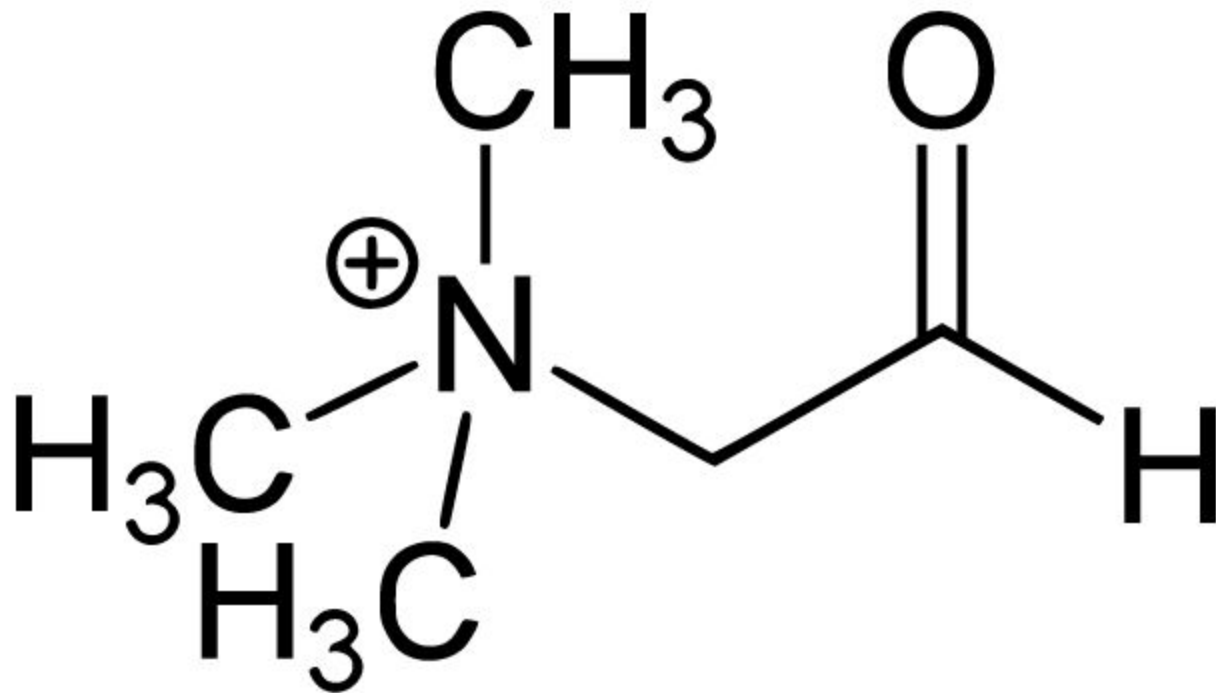
Cleaning Procedure: Blood and other body fluids must be thoroughly cleaned from surfaces and objects before application of this product.

Contact Time: One minute.

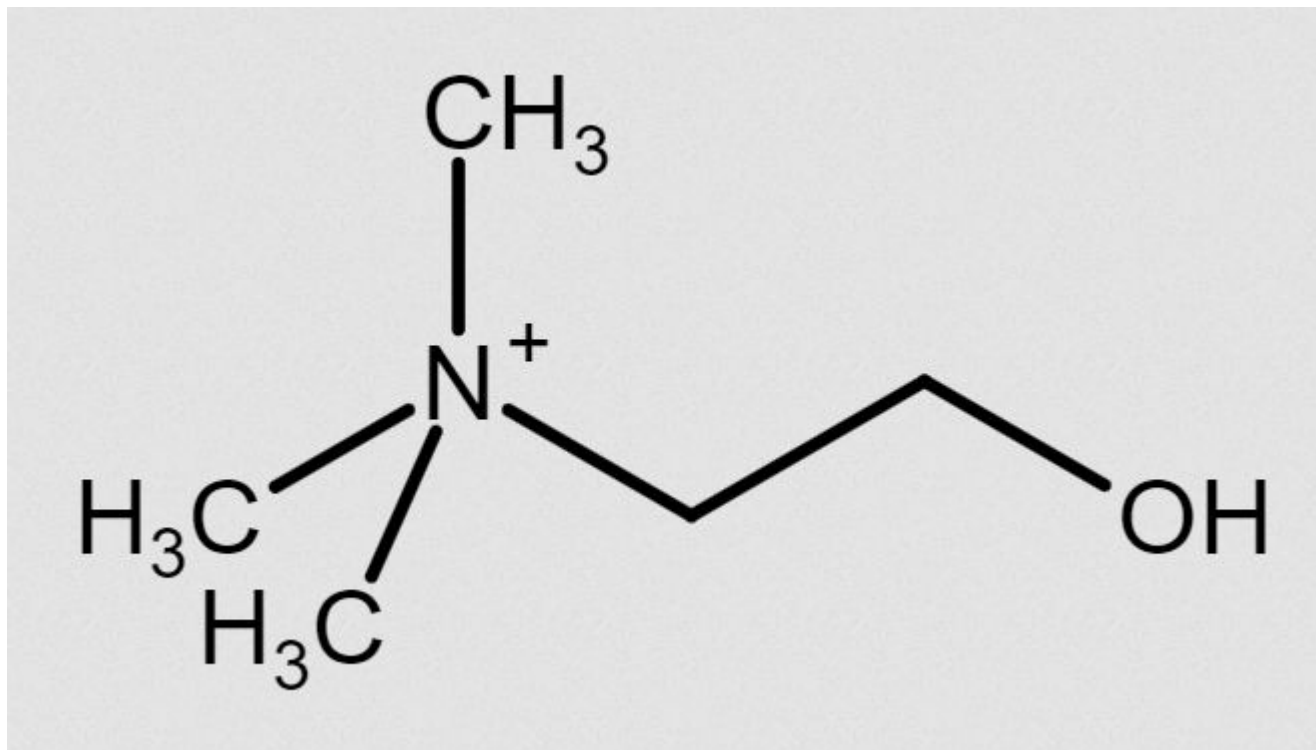
Disposal of Infectious Materials: Blood and other body fluids should be autoclaved and disposed of according to local regulations for infectious waste disposal.



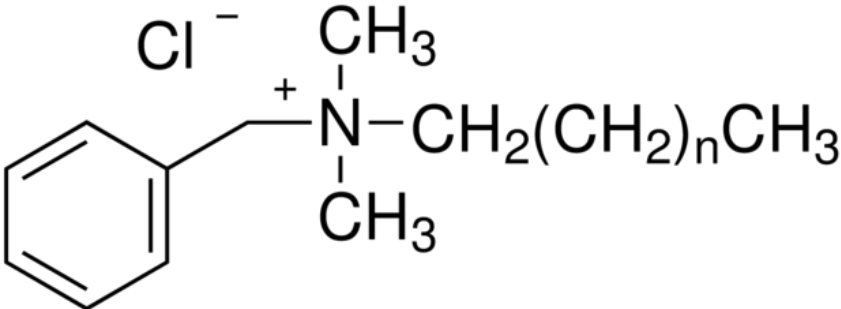
Betaine



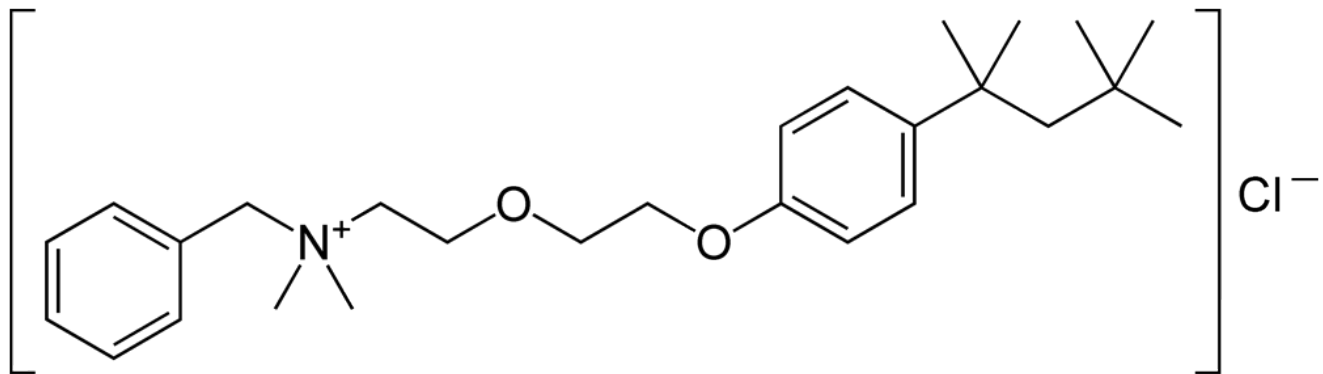
Choline



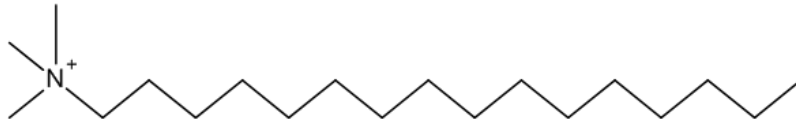
benzalkonium chloride



Benzethonium-chloride

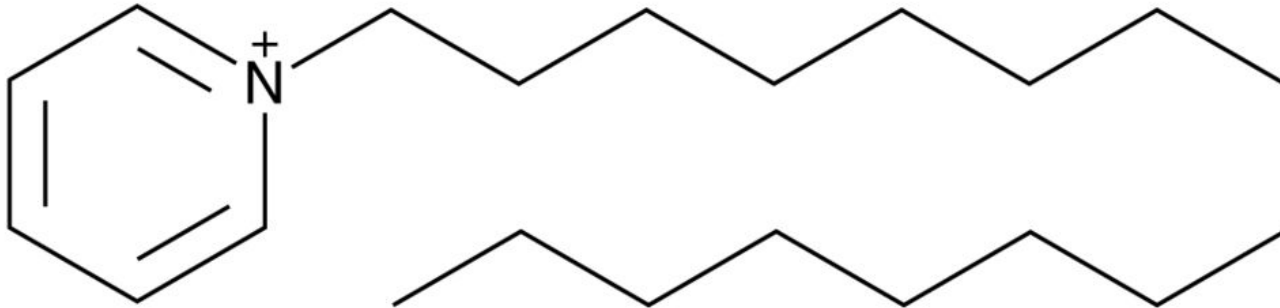


cetrimide



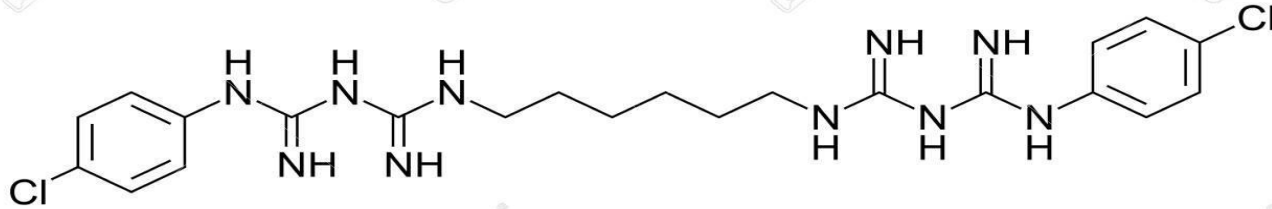
Br⁻

cetylpyridinium chloride



• Cl⁻

Biguandide not a quaternary ammonium compound



Chlorhexidine

$C_{22}H_{30}Cl_2N_{10}$

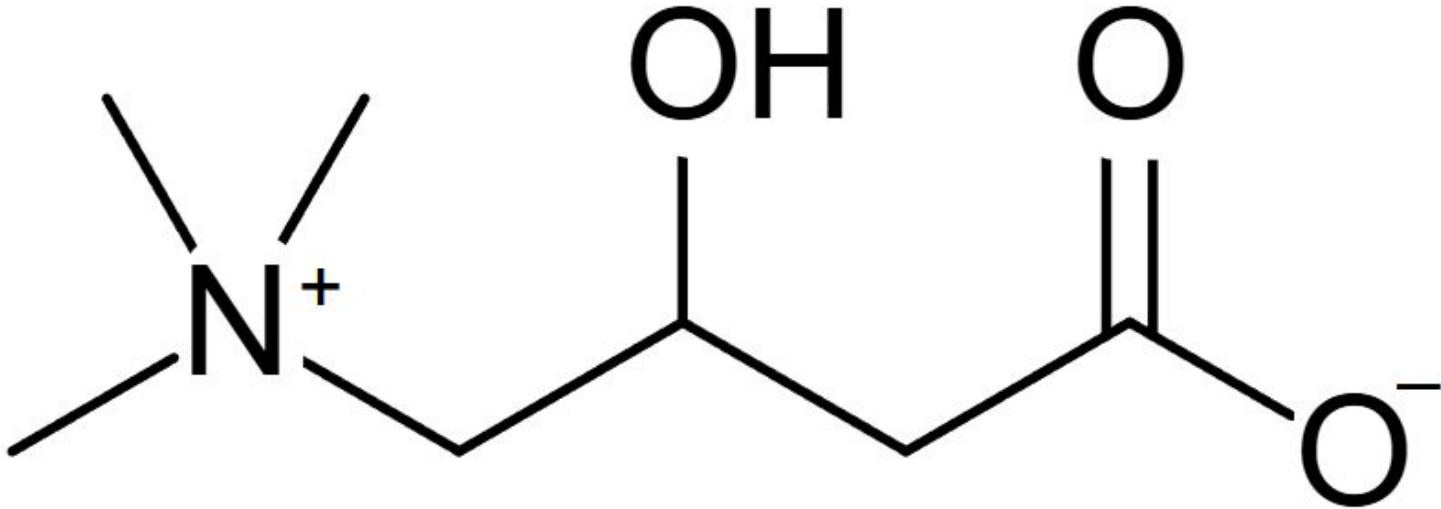


Carbomer 940

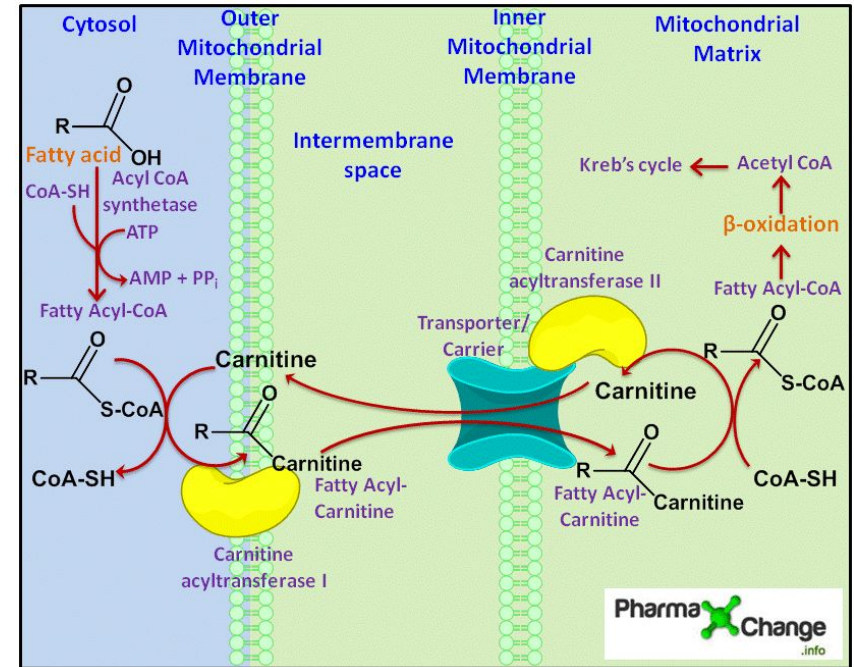
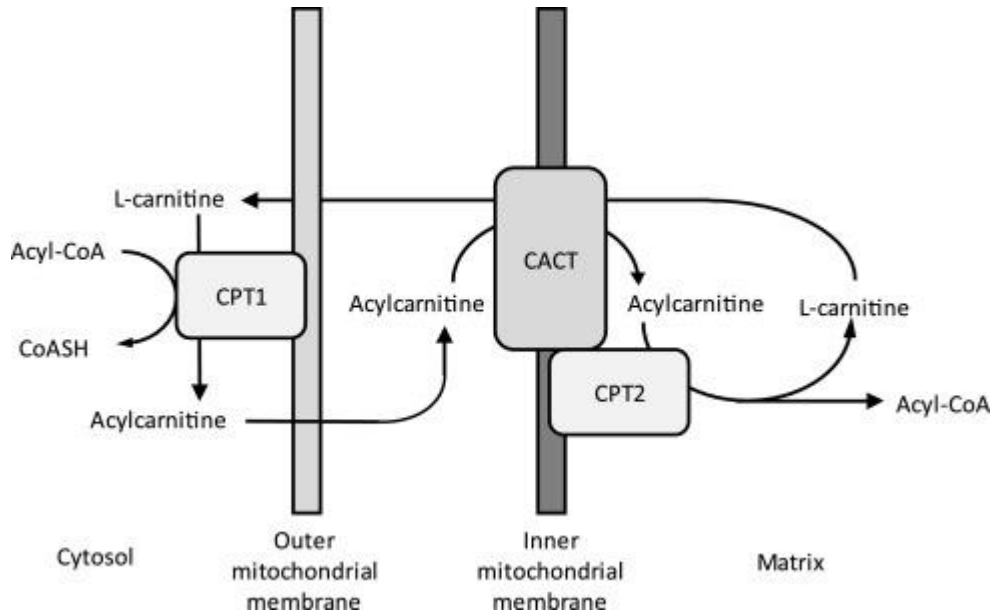
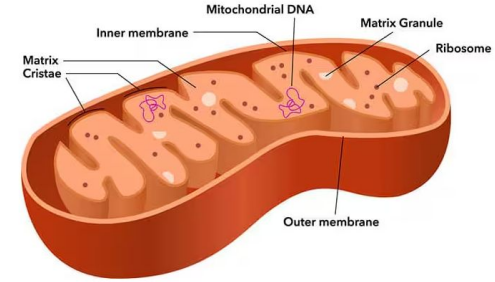
What aren't quats added to hand sanitizer?

Carnitine

Carnitine shuttle for larger (>14 carbons) fatty acids from cytosol to mitochondria



Carnitine shuttle



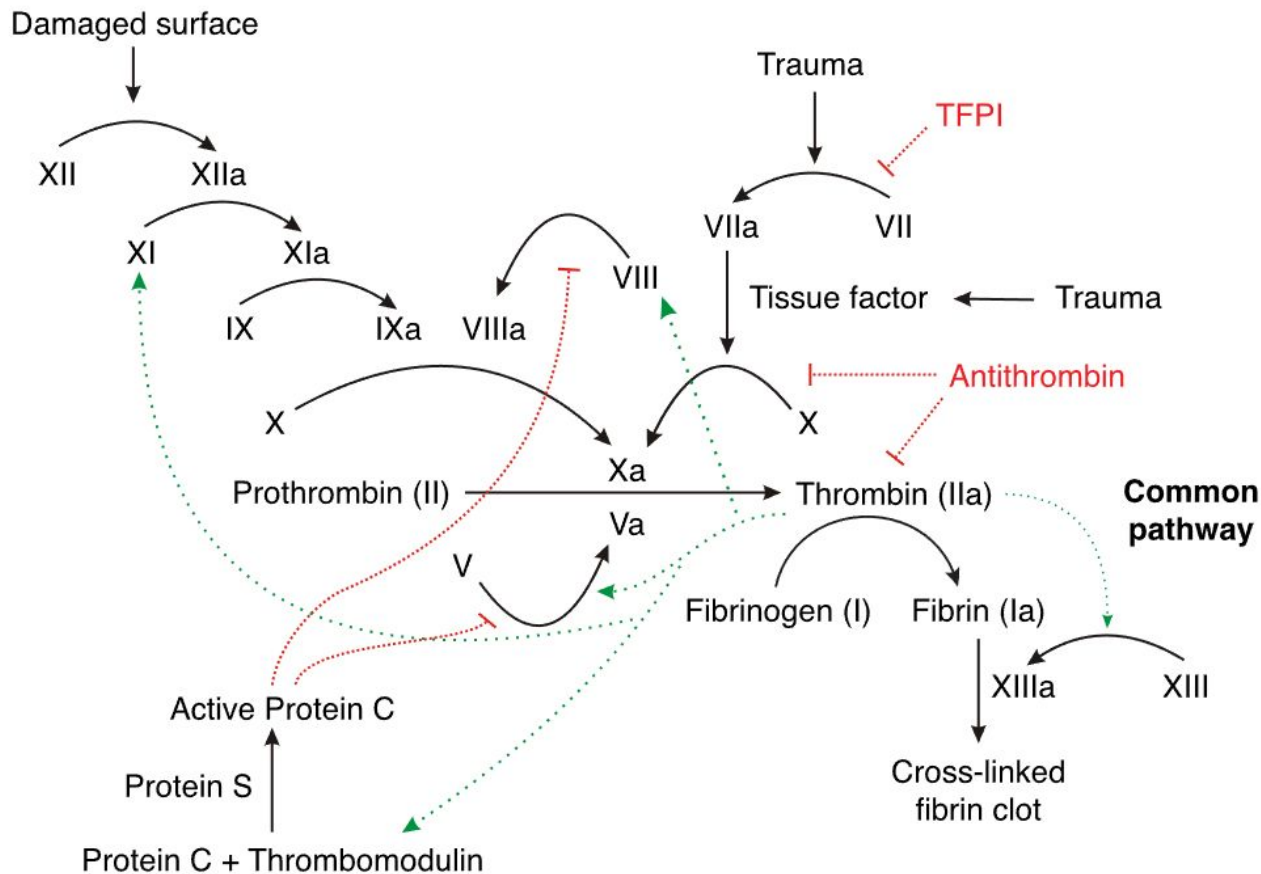
Calcium

Intracellular concentration $>100\text{nM}$

Extracellular $\sim 1\text{mM}$

Contact activation (intrinsic) pathway

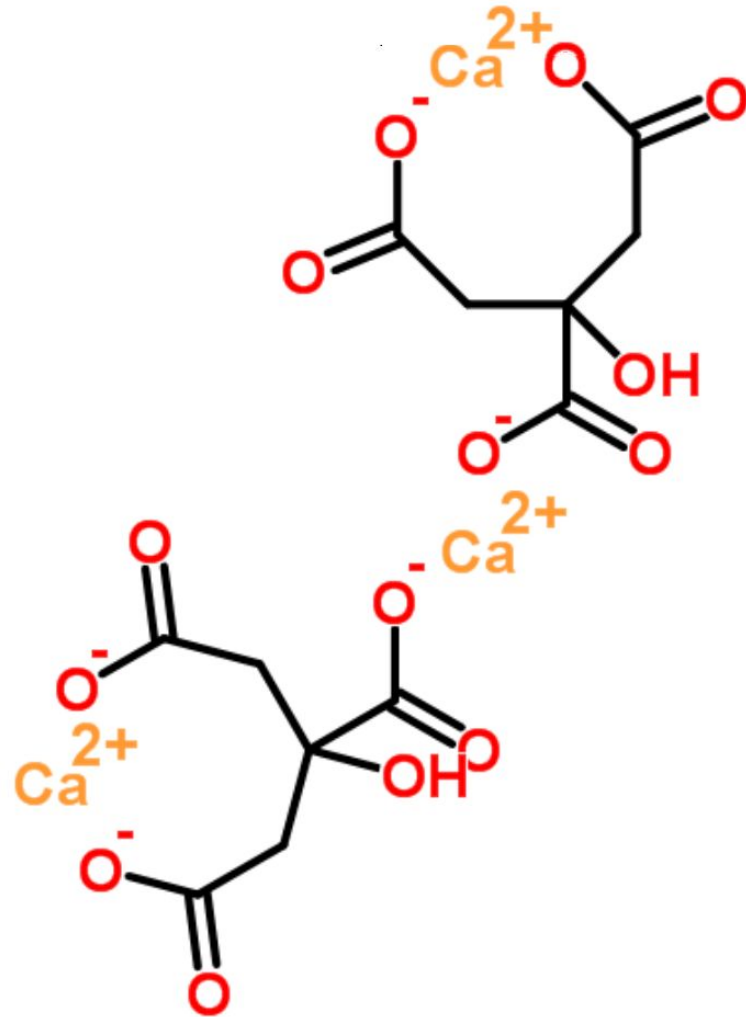
Tissue factor (extrinsic) pathway



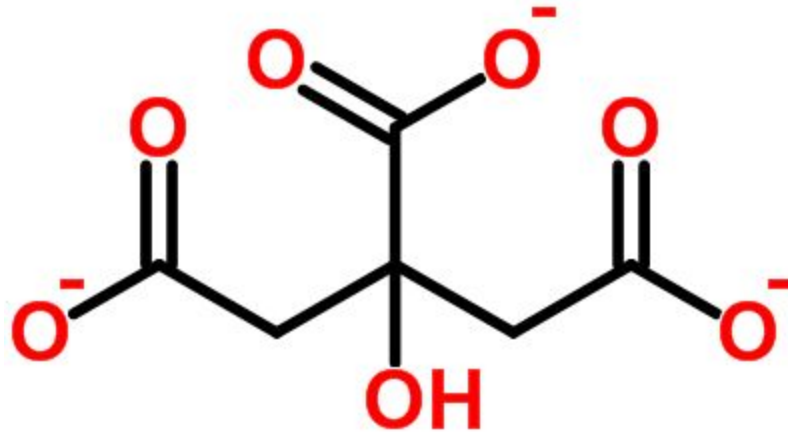
chelators

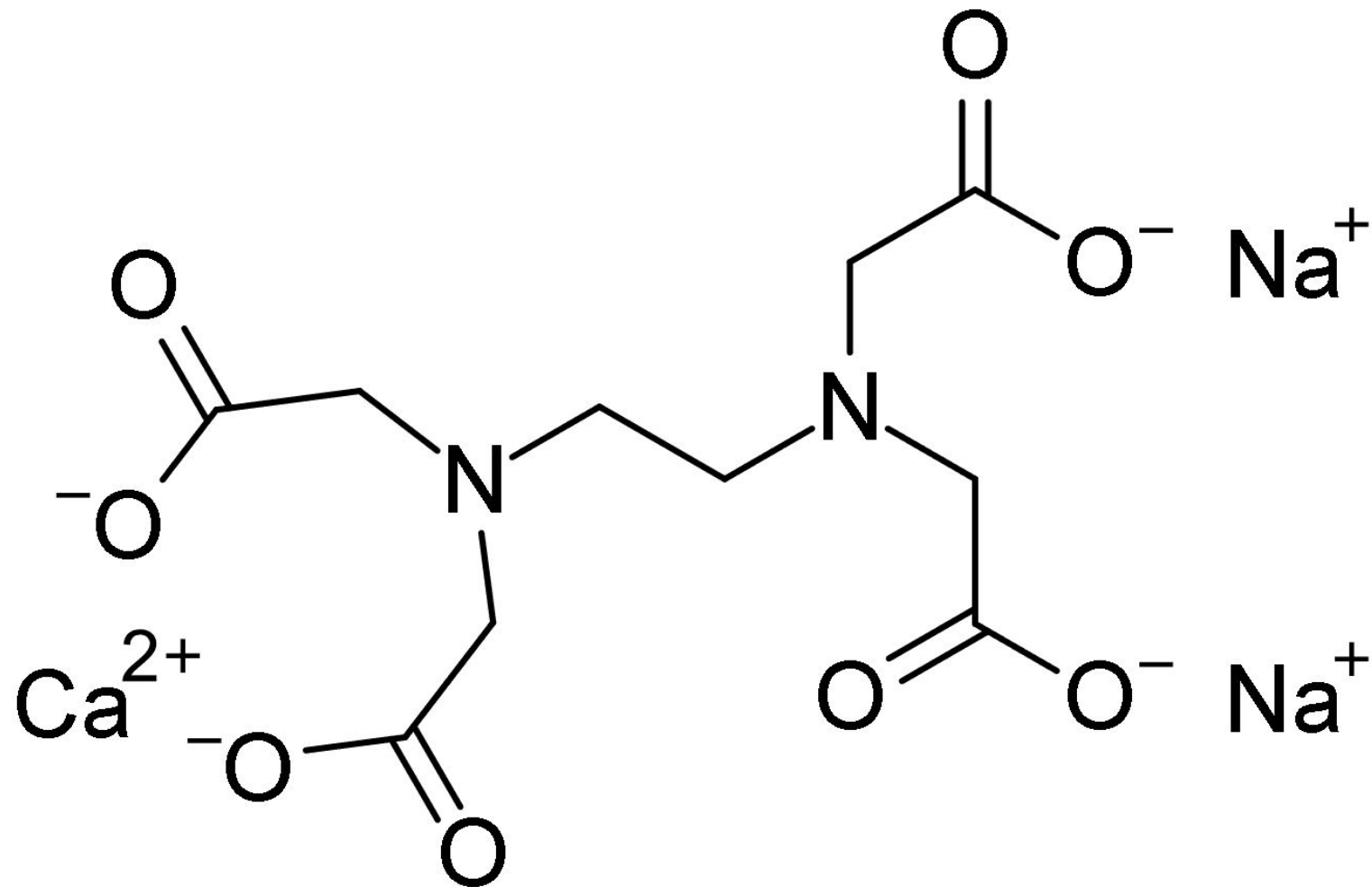
citrate

<https://kidneystones.uchicago.edu/calcium-binding-by-citrate/>

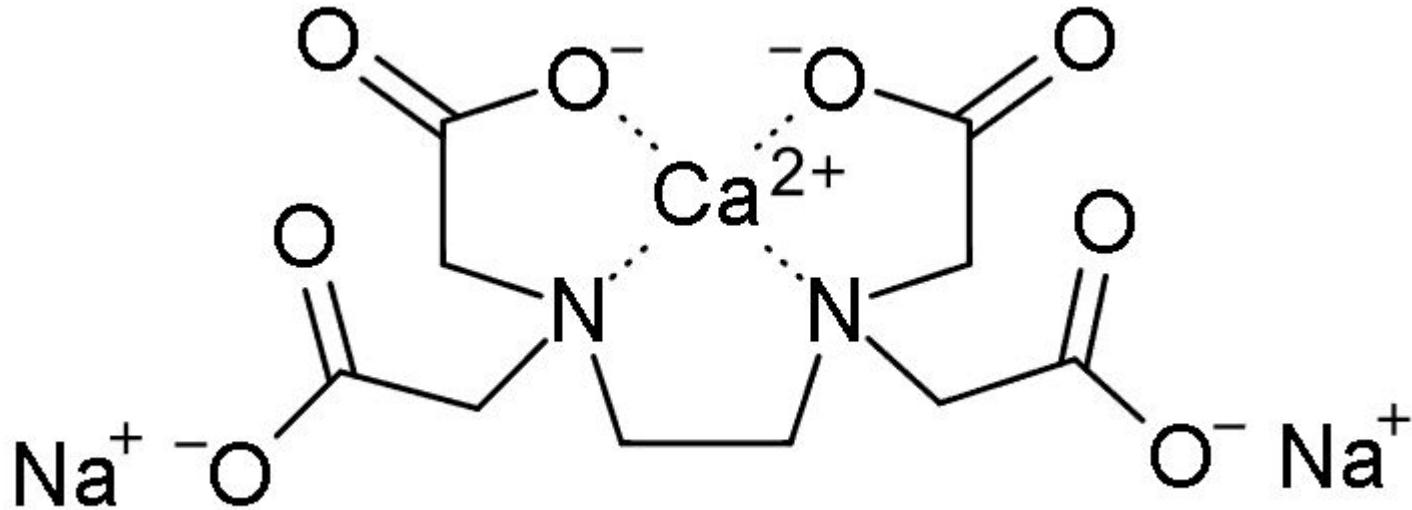


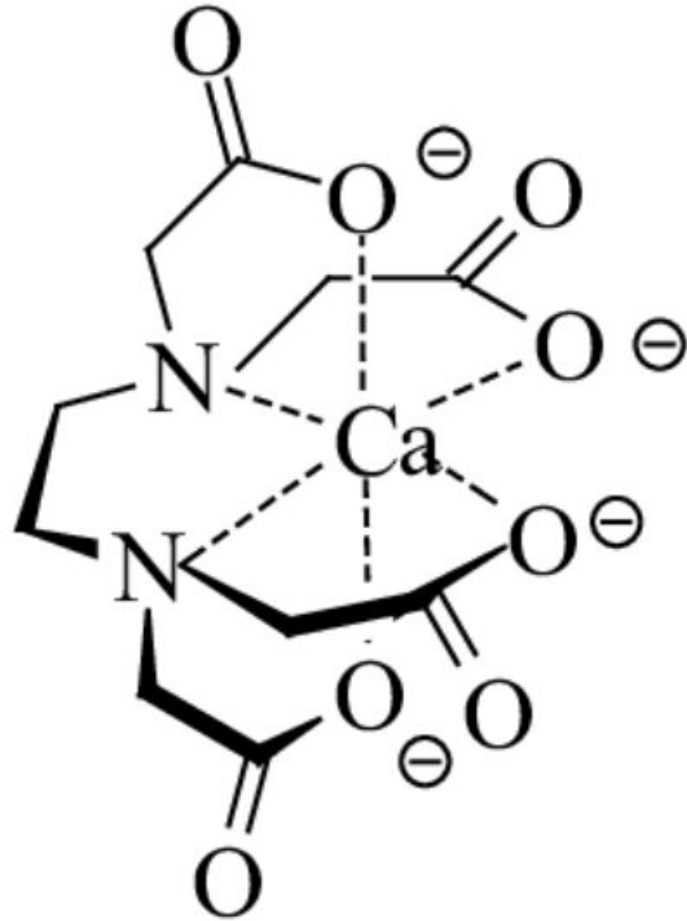
Citrate

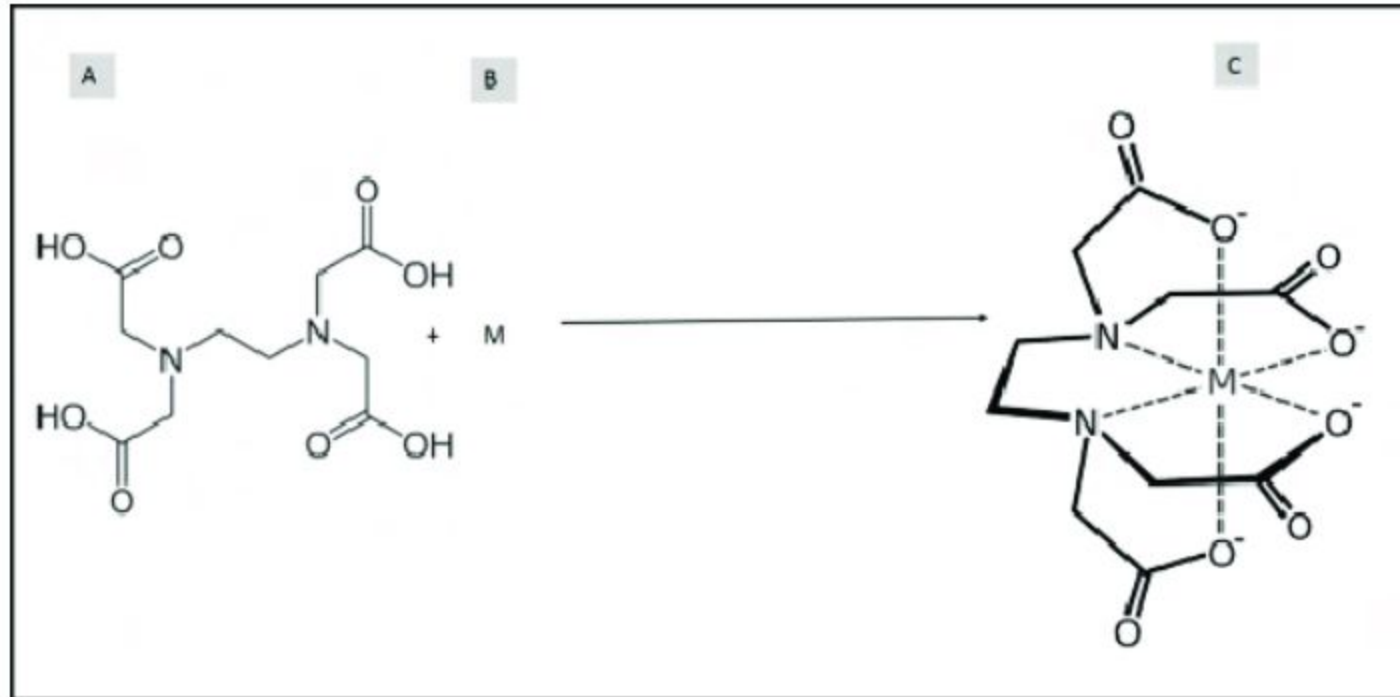




EDTA: Ethylenediaminetetraacetic acid

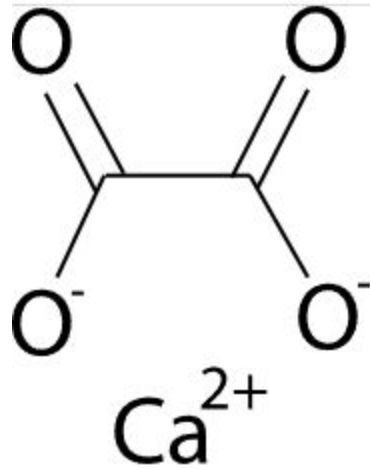






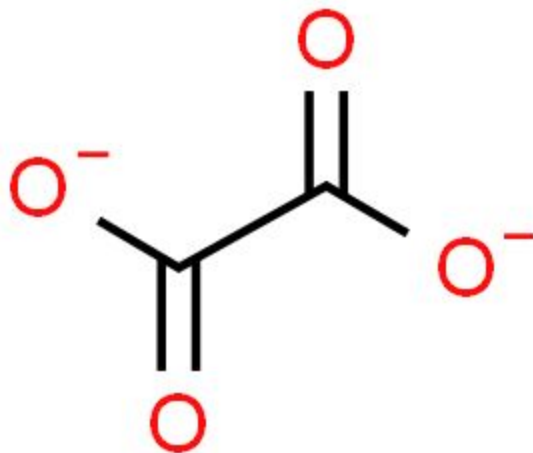
EDTA chelates divalent cations like Magnesium, Calcium etc.

oxalate



Calcium oxalate = kidney stone

oxalate



<http://www.chemspider.com/Chemical-Structure.30549.html>



SECTION 3 - COMPOSITION / INFORMATION ON THE INGREDIENTS

INGREDIENT	% By Weight	CAS Reg. No.
FELDSPAR*	Confidential	68476-25-5
LINEAR SODIUM DODECYL BENZENE SULFONATE (DDBSA)	Confidential	69669-44-9
OXALIC ACID	7.5 - 9.5	144-62-7

*not regulated as hazardous materials

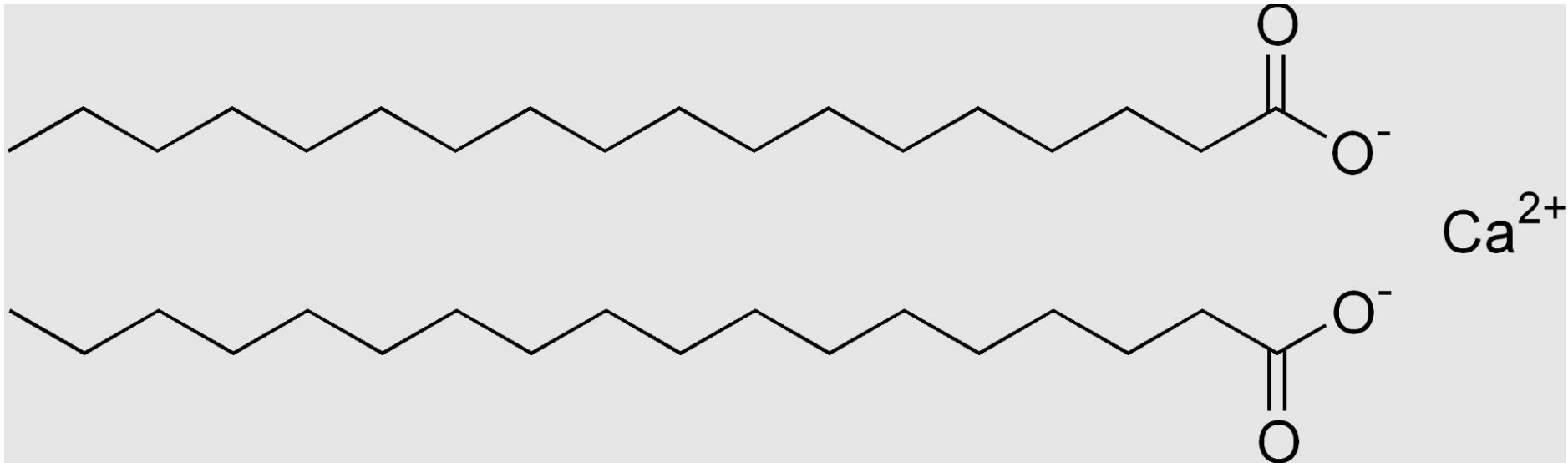
“Heavy metals”

Magnesium complexes with ATP

Magnesium complexes with DNA

Arsenic/arsenate can mimic magnesium but lead to dysregulated function.

Soap scum, apidocere

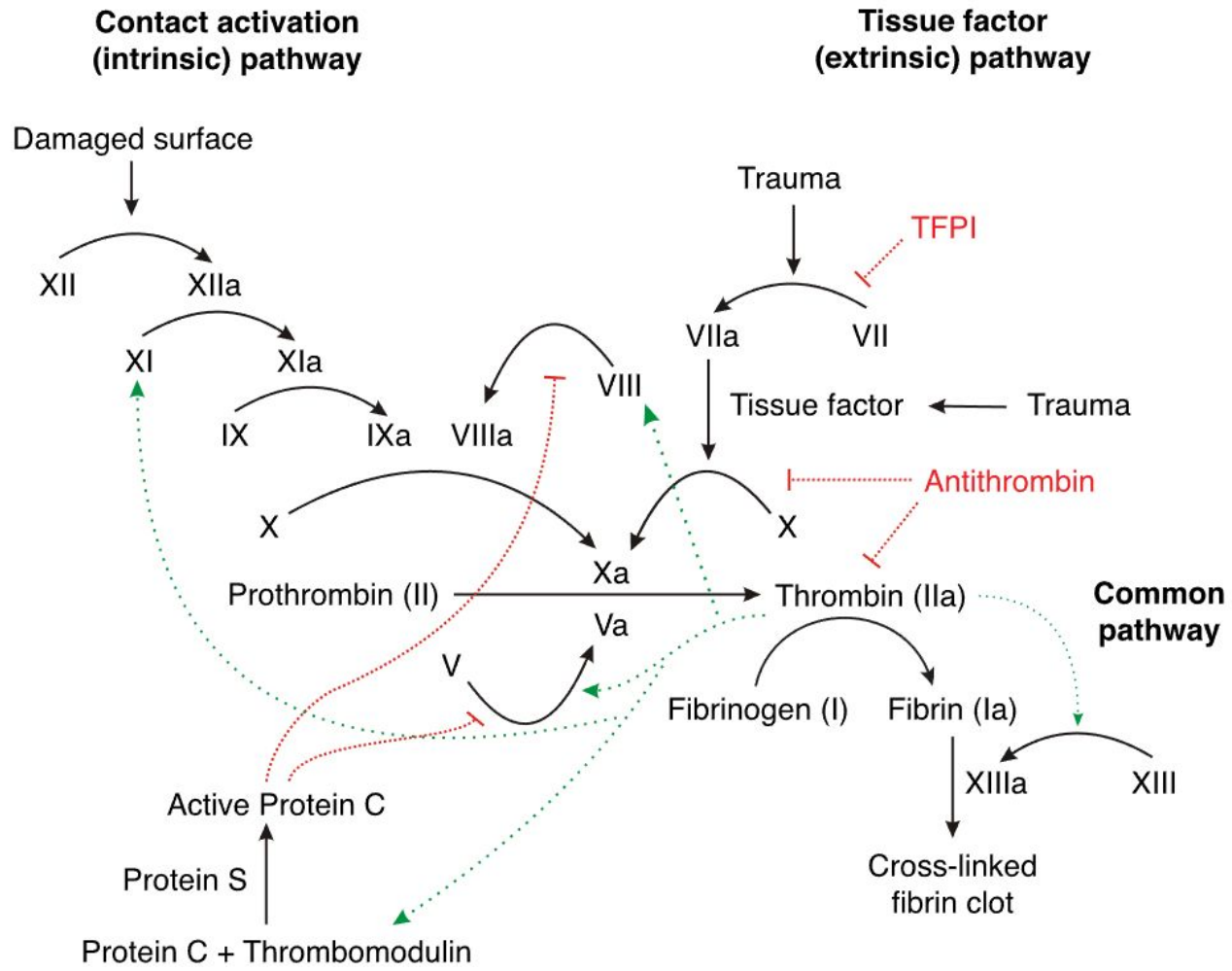


Thrombin, Anti-thrombin

Both cationic (+) charge

Transglutaminases

Factor XIIIa is a [transglutaminase](#) that catalyzes the formation of covalent bonds between lysine and glutamine residues in fibrin



Kaolin clotting (negative charge)

Contact activation of intrinsic pathway

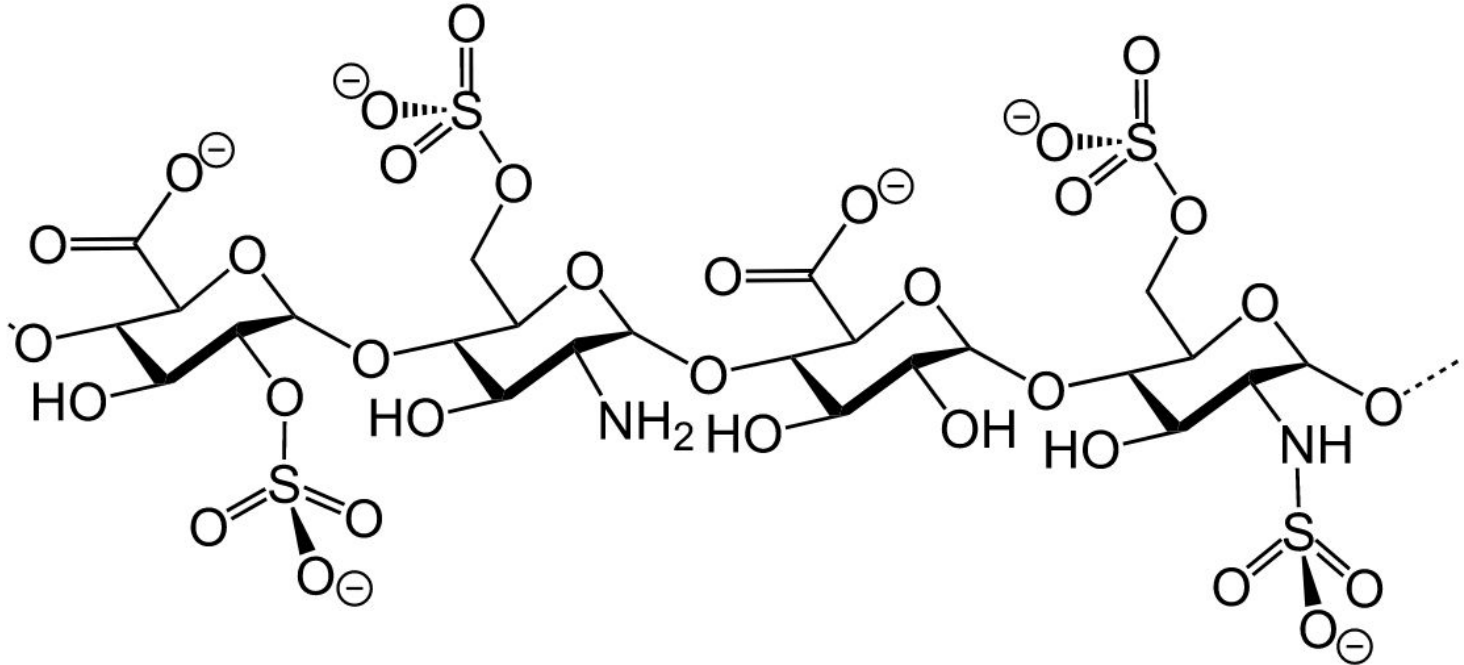
Detects Lupus “anticoagulants” -procoagulant autoantibodies that prolong coagulation assays.

Combat gauze from quikclot



Heparin sulfate- thrombin inhibitor

Very anionic from all those sulfates



Serine proteases

Catalytic triad

Trypsin like

Chymotrypsin like

Thrombin

Elastase

Vacutainer tubes

<https://alvernolabs.com/wp-content/uploads/2016/05/venous-Blood-Collection-Tubes.pdf>

	Red		Red	<ul style="list-style-type: none"> • Silicone coated (glass) • Clot activator - Silicone coated (plastic) 	0 5	For chemistry determinations in serum. May be used for routine blood donor screening and diagnostic testing of serum for infectious disease.** Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 60 minutes.		
	Gold		Red/ Gray	<ul style="list-style-type: none"> • Clot activator and gel for serum separation 	5	For chemistry determinations in serum. May be used for routine blood donor screening and diagnostic testing of serum for infectious disease.** Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 30 minutes.		
	Orange			<ul style="list-style-type: none"> • Thrombin-based clot activator with gel for serum separation 	5 to 6	For stat chemistry determinations in serum. Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 5 minutes.		
	Light Green			<ul style="list-style-type: none"> • Lithium heparin and gel for plasma separation 	8	For chemistry determinations in plasma. Tube inversions ensure mixing of anticoagulant (heparin) with blood to prevent clotting.		
	Green		Translucent Green		Green	<ul style="list-style-type: none"> • Sodium heparin • Lithium heparin 	8 8	For chemistry determinations in plasma. Tube inversions ensure mixing of anticoagulant (heparin) with blood to prevent clotting.
	Lavender		Translucent Lavender		Lavender	<ul style="list-style-type: none"> • Liquid K₂EDTA (glass) • Spray-coated K₂EDTA (plastic) 	8 8	K ₂ EDTA and K ₃ EDTA for whole blood hematology determinations. K ₃ EDTA may be used for routine immunohematology testing*** Tube inversions ensure mixing of anticoagulant (EDTA) with blood to prevent clotting.
	Pink					<ul style="list-style-type: none"> • Spray-coated K₂EDTA (plastic) 	8	For whole blood hematology determinations. May be used for routine immunohematology testing.*** Designed with special cross-match label for patient information required by the AABB. Tube inversions ensures mixing of anticoagulant (EDTA) with blood to prevent clotting.
	White					<ul style="list-style-type: none"> • K₂EDTA and gel for plasma separation 	8	For use in molecular diagnostic test methods (such as, but not limited to, polymerase chain reaction [PCR] and/or branched DNA [bDNA] amplification techniques.) Tube inversions ensure mixing of anticoagulant (EDTA) with blood to prevent clotting.
	Light Blue		Clear			Buffered sodium citrate 0.109 M (3.2%) plastic	3-4	For coagulation determinations. Tube inversions ensure mixing of anticoagulant (citrate) to prevent clotting.

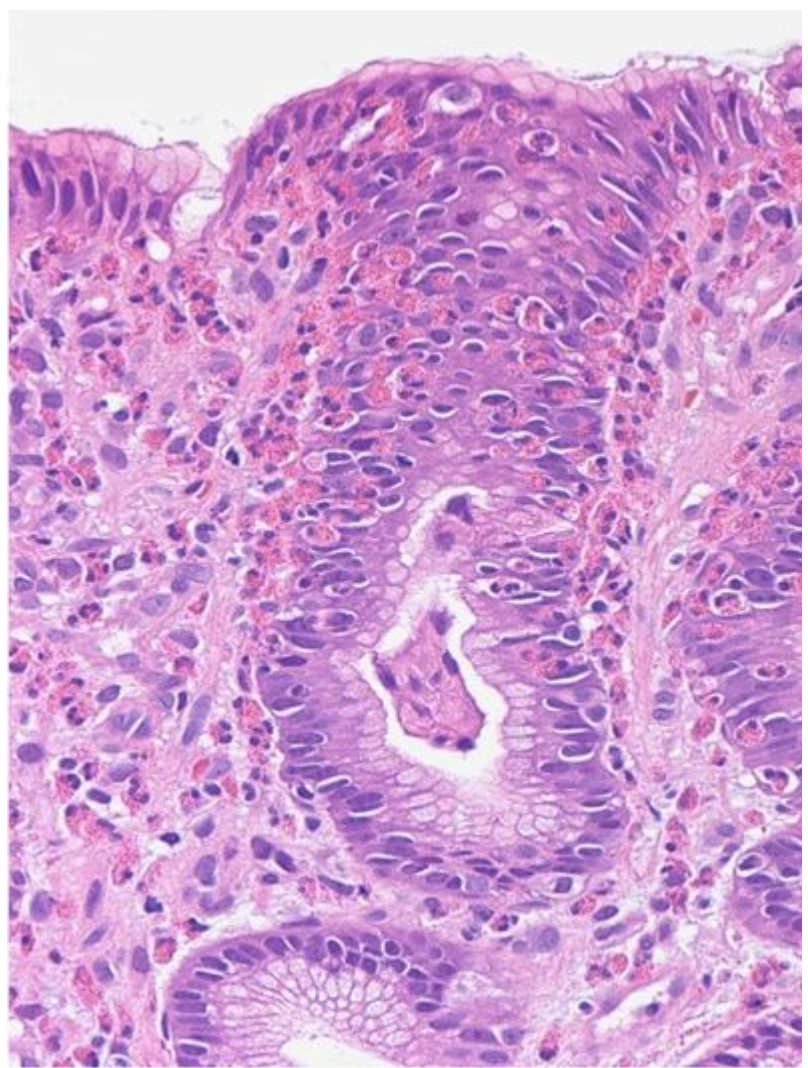
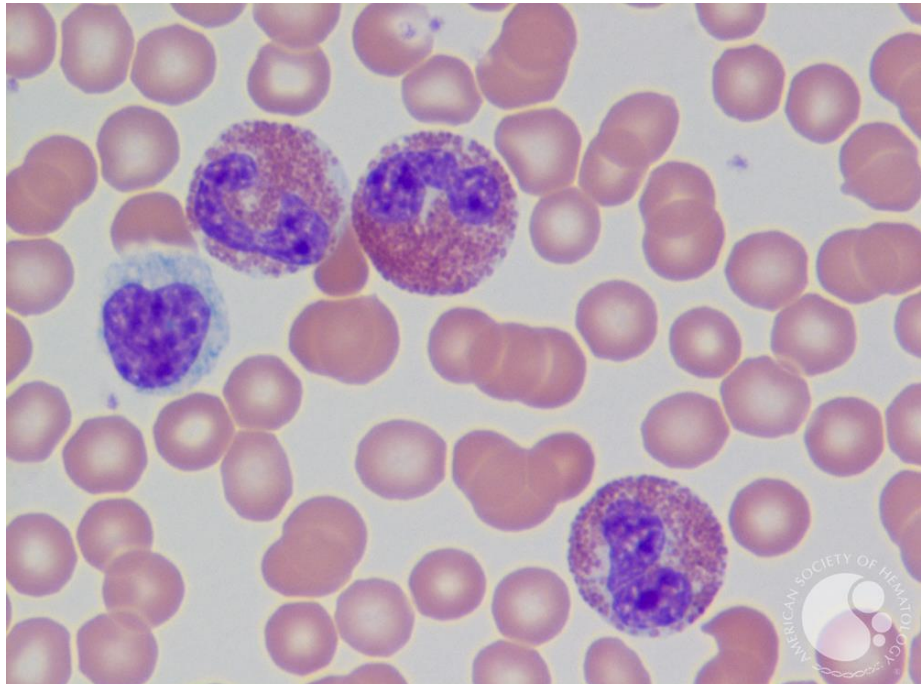
Calcineurin

Calcineurin is a serine-threonine specific Ca^{2+} -calmodulin-activated protein phosphatase that is conserved from yeast to humans.

Calmodulin

Eosinophil Major Basic Protein

rich in arginine with an isoelectric point (pI) of 11.4



Eosinophil cationic protein

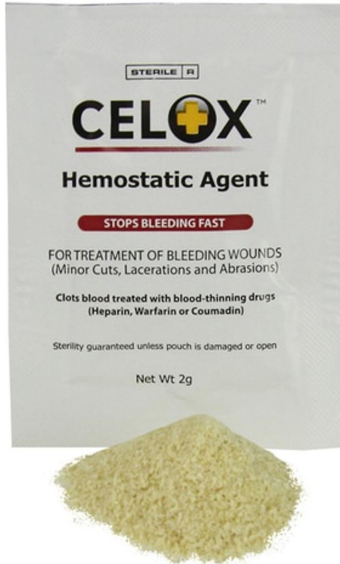
Has ribonuclease activity.

Can induce apoptosis

Chitosan

Not a quaternary ammonium compound!

Amine groups protonated at physiologic pH ie (+) charged.



Flocculants

polydiallyldimethylammonium chloride polyDADMAC

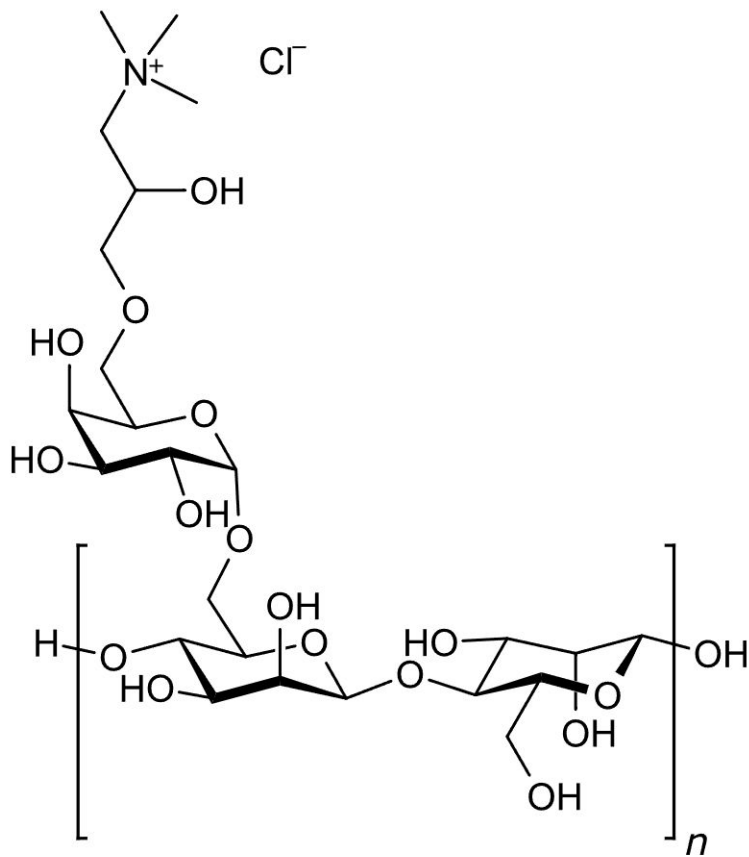
ferric chloride

aluminium sulphate

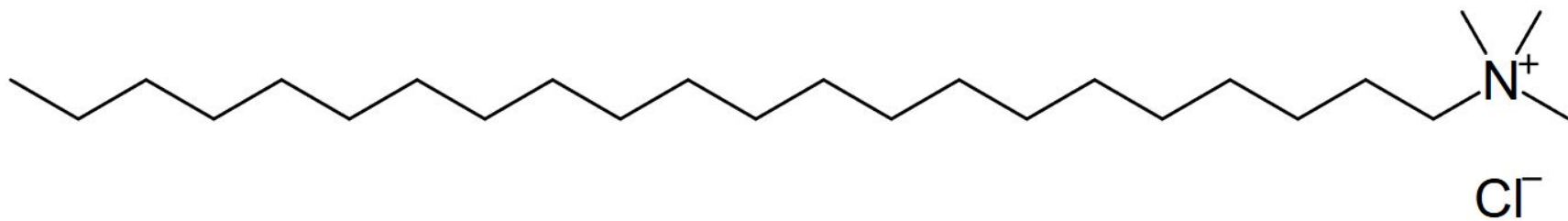
Hair

<https://pmc.ncbi.nlm.nih.gov/articles/PMC4387693/>

Guar Hydroxypropyltrimonium Chloride



Behentrimonium Chloride



APES

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1141206/>

Nylon blotting membranes

Poly-l-lysine

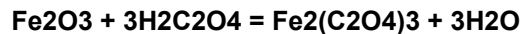
<https://corecheminc.com/cleaning-with-oxalic-acid-heres-what-you-need-to-know/#:~:text=When%20Oxalic%20Acid%20comes%20in,water%20and%20easily%20rinses%20away.>

Oxalic Acid is widely known for its ability to remove rust stains. How does Oxalic remove a stain that many other types of cleaning chemicals can't budge? Here are the fascinating facts!

When Oxalic Acid comes in contact with rust, a chemical reaction known as a double displacement reaction occurs. This changes the rust (a.k.a. iron oxide) into iron oxalate. Since iron oxalate is a water-soluble salt, it dissolves in water and easily rinses away.

Basically, the iron in the rust attaches itself to the oxidized carbon in the acid to create iron oxalate, leaving the hydrogen and oxygen to get together to make some more.... water.

It looks like this:



Iron Oxide (Rust) + Oxalic Acid = Iron(III) Oxalate + Water