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Ethylene Diamine Tetra Acetic Acid (EDTA)

Anticoagulant	Potassium EDTA (dipotassium or trispotassium)			
Method	Chelates calcium			
Alternate names	PTT (purple top tube)	LTT (lavender top tube)		
Yields	Whole blood (mixed)	Cell pellet (centrifuged sediment)	Plasma (centrifuged supernatant)	
Tests	 Complete blood count (CBC) Packed cell volume (PCV) Fibrinogen precipitation test Total plasma protein Reticulocyte count Blood-typing Crossmatch Serological tests 			
Advantage	Minimal effects to cell morphology as compared to other anticoagulants when proper ratio of blood to EDTA is maintained			
Disadvantage	May lyse the cells in certain avian and reptile species			
Prolonged storage affects	 Neutrophil nuclear hypersegmentation Indentation of lymphocyte nuclei Swelling of red blood cells (RBCs) with correlating increase in mean cell volume (MCV) Platelet clumping Detachment of epicellular hemoparasites/bacteria 			



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Heparin

Anticoagulant	Lithium or sodium heparin		
Method	Blocks the formation of thrombin and thromboplastin in the coagulation process		
Alternate names	GTT (green topped tube)		
Yields	Whole blood (mixed)	Cell pellet (centrifuged sediment)	Plasma (centrifuged supernatant)
Tests	 Avian, reptile, fish, amphibian CBC PCV Fibrinogen (heat precipitation) Total plasma protein Chemistry panels Serological tests 		
Advantage	 Immediate testing for chemistry panels with a higher yield than the same amount of serum Can be used for a CBC in species in which EDTA lyses cells 		
Disadvantage	 Promotes platelet clumping Causes distortion to cellular morphology May interfere with select chemistry tests when sodium heparin is used 		
Prolonged storage affects	Coagulation may occur		



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Citrate

Anticoagulant	Sodium citrate
Method	Weak chelation of calcium
Tests	 Coagulation Tests Prothrombin time (PT) Activated partial thromboplastin time (aPTT) Fibrinogen D-dimer Thrombin Time (TT) Antithrombin Thromboelastogram (TEG)
Advantage	Calcium is added to sample and clot time or clotting factors are evaluated
Disadvantage	 Ratio must be exactly 1:9 for blood to anticoagulant Extra anticoagulant dilutes sample Samples must be tested within 2 hours for optimal validity



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Serum

Additives	No Additive (Red or white)	Clot Activator (Silica crystals)	Separator Gel Red with yellow inner ring, red/gray or red/black top, yellow, brown
Alternate names	RTT (red top tube) or WTT (white top tube)		SST (serum separator tube) Marble top or tiger top tube
Yields	Serum after complete clotting and centrifugation (supernatant) – clot not used		
Tests	 Serum protein Serum chemistry panel Serological tests 		
Advantage	Useful for tests in which anticoagulants will interfere		
Disadvantage	 Larger volume of blood is required Delays in testing to allow full clot formation (minimizes hemolysis) Separator gel may interfere with some tests (like hormonal assays such as cortisol, progesterone, etc.) 		
Prolonged storage affects	Coagulation may occur		



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Other Less Common Tubes

Royal blue top	Sodium heparin or no additive	Used for heavy metal testing (lead, copper, zinc)	In other tubes, rubber stoppers contain zinc
Gray top tube	Sodium fluoride with or without oxalate	Stabilizes glucose for measurement	Oxalate serves as an anticoagulant
Gray top tube	Diatomaceous earth shortens clot time for evaluation	Activated clot time (ACT) to test the	Newer tests are used including the APTT which yields similar information
Blood culture tubes	Contain a broth for microbial analysis and anticoagulant	Must be collected aseptically	