The meaning of deteriorate

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The dictionary meaning of deteriorate. The word meaning of deteriorate in malayalam. Deteriorate meaning in bengali. The opposite meaning of deteriorate. The meaning of deteriorate verb. The marathi meaning of deteriorate. The malayalam meaning of deteriorate. The same meaning of deteriorate.

(Definition of Abuse from the Cambridge Advanced Learner Dictionary & Thesaurus Â© Cambridge University Press) Other Examples As soon as tissues are removed from the body, vascular power is lost, hemoglobin pain from red blood cells and tissues begin to die. Therefore, for tissues to be studied in the histology laboratory, they must be realistically secured and stored. Fixation inhibits autolysis and rot, hardens tissues and allows easy manipulation of soft tissues such as friable tumors and brain. Cells showing autolysis and putrefaction (presence of bacteria) in a section of tissue Fixing also converts the normal semi-fluid consistency of cells (sol) into an irreversible semi-solid (gel). The most widely used fixative in cellular pathology is formalin. When formalin comes into contact with fresh tissue, the hemoglobin converts to the hematin of the brown-tanning pigment. This conversion is observed when the fresh fabric (which is normally a red-pink color) is placed in 10% formalin at room temperature. Over a relatively short period of time, there is a change in the surface colour to greyish brown and this change can be seen in the images below. When this color change is complete, the fabric is generally considered fixed and ready for conventional histological processing. Fresh fabric fixed fabric The commercially available solution is a gas (formaldehyde) that is able to dissolve in water up to 40%, this solution is called formalin. In tissue fixation, probably the most important reactions are those that stabilize proteins. Aldehydes have the property of forming crosslinks between proteins thus forming a gel, ideally keeping everything in their in vivo relationship with each other. The soluble proteins are attached to the structural proteins and thus made insoluble and the whole structure is given some mechanical force. In the formation of crosslinks with proteins, probably most of the information is known about the behavior of aldehydes. Reactions between formaldehyde and amino acids and proteins have long been known. Essentially, the cross-links are formed between protein molecules, the reaction is with the basic amino acid lysine. The reaction between protein and formaldehyde is largely reversible by an excess of water in the first 24 hours of reaction time. Formaldehyde is a well-known chemical that has a multitude of uses – from being a component of mobile glues and carpets in specific manufacturing applications to being a disinfectant and preservative in hospital, research and mortuary environments. In cellular pathology, the most commonly used concentration of formalin is 10% (equivalent to 4% formaldehyde). Formaldehyde itself is actually a gas under normal or standard conditions. formaldehyde with which we are more familiar is a solution of 37-40% of formaldehyde gas dissolved in water. The formaldehyde is the simplest member of the organic class of molecules known asAnd it has a ch20 chemical formula. The aldehyde category is composed of molecules containing a functional group H-C = or (ie a carbon atom is mono-bonded to a hydrogen and double-bonded atom to an oxygen atom). This functional group must be at the end of a molecule so that the molecule is considurated by an aldehyde. On the contrary if this group is somewhere within the body of the molecule, the molecule is therefore classified as ketone. If the aldehyde was actually formaldehyde, the "R" would be a hydrogen atom (H). Regarding the "H" group key, what exactly are alkyl groups and ARYL? Simply established, they are aliphatic and aromatic derivatives of hydrocarbon, respectively. A hydrocarbon is a molecule that consists of strictly hydrogen and carbon atoms. Aliphatic molecules are those that are in chain form, while aromatic molecules are simply those that form a ring. Formaldehyde has a strong tendency to polymerize in solution. This means that monomeric subunits (CH2O) join to form an upper molecular weight aggregate but of the same chemical relationship. In solution, formaldehyde is generally in dimeric and trimeric form (two and three connected monomer subunits respectively). However, 10% commercial formality is generally in monomeric form. Polymerization is significant when it comes to fixation, as a higher molecular weight and greater general dimension means a more slow penetration rate (molecular weight and penetration rate are generally inversely proportional to one another). To this end, manufacturers add methanol to formalin solutions in order to help prevent polymerization. Methanol is a relative near formaldehyde (if the first is an alcohol, not an aldehyde). The difference between the two molecules is that methanol has a unique unit hydrogen atom to its oxygen, which translates directly into a single link between carbon and oxygen atoms (C-OH), instead of the double bond that is Present between carbon and oxygen atoms in an aldehyde (HC = o). This is also the reason why methanol is so toxic to the body. The ingested or absorbed methanol is oxidized inside the body for formaldehyde and formic acid. The latter is the formaldehyde oxidation product, therefore the "oxidation chain" goes from methanol to formaldehyde to formic acid. The methanol ant formaldehyde is a non-coagulant fixative, additive, which means that while chemically binds to the fabric, it does not form a gel-like matrix that inhibits the subsequent penetration of reagent. The portions of the fabric to which formaldehyde binds are mainly the reactive hydrogen atoms present in amino acids. All amino acids consist of a group of amino acids (-NH2) on one side of the and from a group of carboxyl (-C02H) on the other side of the molecule - then when combined together in oneto form a protein, one end of the overall protein will be a group of amino (known as the N-terminal end) and the other end of the protein will be a group of carboxyls (known as the C-terminal end). A formaldehyde molecule will usually react with the N-terminal end of proteins - producing methylene bridges (H-C-H) between protein molecules. It is believed that the reaction with the N-terminal end is due to the usual pH range of formal solutions and biochemical properties of amino acids. The formaldehyde also binds with sulfide groups (-SH) in amino acid cysteine to form cross-links that further stabilize proteins. These bridges and cross-links, while stabilizing and preserving the tissue, are what creates the need for epitope recovery steps in various immunohistochemical procedures. Reaction with protein* Protein is formed by amino acid chains* One end of the protein is an amino group (NH2) and the other a carboxyle group (COOH)* The portions of the tissue to which the formaline binds are the reactive atoms of the final amino acid hydrogen (N-terminal) Basic amino acid Reaction with amino acids* Produces methylene bridges (H-C-H) between protein molecules with lysine * Formalina also binds with sulfide groups (-SH) in cysteine to form additional Lysine Cysteine cross-links A consideration when using formalin as a fixative is the pH of the solution itself. As indicated, due to the usual pH range of formalin solutions, formaldehyde molecules will normally bind with the N-terminal end of proteins. This pH is normally close to neutrality. When the pH of a formaldehyde solution (such as formalin of 10%) becomes acid, an artifact pigment can form in blood tissues when exposed to the solution. This pigment is called hematine. It is a dark brown / black artifact that can form when the pH of the solution becomes too acidic. For this reason, formal solutions are normally kept above a pH of six. This specific pH value is a direct result of an amino acid property known as the isoelectric point (p1). It is the pH in which amino acid has no net electrical charge. Under the p1 value, solution amino acids tend to be charged positively, and above the p1 value, amino acids tend to be charged negatively). The change in charge is more than a gradual process - not an immediate crossover between positive, neutral and negative. Therefore, while pH values climb, amino acids in solution become increasingly negative (and vice versa). Each amino acid has its own p1 value, but the average value for all amino acids, collectively, is about six. Therefore, the minimum pH required for the prevention of hematine formation and the pH to which amino acids tend to beIt's the same. Formaline solutions, generally kept above a ph 6.0, would begin to oxidize the amino groups of exposed proteins. In other words, amino groups would have lost an ion of hydrogen. is to this oxidized group that formaldehyde molecules tend toDue to the tendency of formalin to oxidise to formic acid when exposed to atmospheric oxygen, most solutions are buffered to inhibit the formation of hematin pigments. A very common buffer is phosphate (i.e. sodium, monobasic and dibasic phosphate). Although it is a very effective buffer, when phosphate is used in formalin, the dehydration process must be started at a concentration of 70% (or lower, of course) to prevent phosphate from leaking out of the solution. This precipitate can leave artificial remains in the tissue area and, more commonly, can lead to a blockage in the line of the initial alcohol or tube on the tissue processor. In addition to keeping the first alcohol at 70% or lower to prevent this from happening, you can also use a formalin solution buffered with a non-phosphate buffer. These fixatives produce the same results as their phosphate-buffered counterparts, but do not have the discomfort of the phosphate precipitate associated with them. Formaldehyde may be the simplest member of the aldehyde classification of organic molecules, but its uses go far beyond histological laboratories and go far beyond its aldehyde brothers. It is perhaps not the fastest fixative available, but it is certainly the most compatible with the wide range of procedures that are performed in todayâs research and histology labs. Undoubtedly, its simple molecular structure does not accurately reflect the complexity of its actions or the efficiency with which they are carried out.Ã¨ Poor fixation with loss of tissue during processing The fixation of formalin affects every subsequent step that the tissue has to endure. Formalin preserves tissues by stabilising proteins and preventing both autolysis and putrefaction. It also maintains the relationship between cells and extracellular substances by changing soluble substances within the cell to insoluble substances, thus protecting the tissue from the denaturing effects of the devastation of subsequent processing. If the fixation is inadequate or inappropriate, then the subsequent methods of staining will be compromised. Delays in fixation, changes in the duration of fixation or changes in the concentration of non-buffered fixative may lead to poor overall fixation of nuclei, cells and tissues.However, the work of Fox et al. (1985) has shown that only slight changes occur in the mid-nuclear area when the tissues are fixed in reserve formaldehyde dilutions ranging from 2% to 20%. These solutions are equivalent to formalin concentrations between 5% and 50% (see graphs and search links below). In addition, more recent studies with neutral buffered formaldehyde have also concluded that the reduction in concentration has no significant impact tissutal, on nuclear morphology or on the dreads colored sections with H & E (View-Fox_1985.PFDMENTIOr FOX_AST_AL_T_THDHFDIMENTIZE. Kbfile Type: pdfdownload files when formaline is below optimal concentration, an inadequate fixation occurs, as can be seen clearly in the images below. The samples on the left of the container and on the sectioning bench are clearly not fixed after having the same fixing time of the samples on the right. This can occur above all outside the laboratory when the operating rooms have its own concentrated formaldehyde intake. As a result, the dilution of formaline is not always maintained at an optimal concentration, generally due to poor control in the training of personnel to maintain the correct dilution procedures. The following microscopic images show the effect that a poor and inadequate formaline fixation can have on colored emaatoxylyl and eosin preparations. It is clearly seen that the images confirm the conclusions of the graphs described above, where the area and the number of nuclei are drastically reduced unless optimal formaline concentrations are maintained. Poor fixation â € "low power scarce power â €" Medium power scarce fixation â € "high power good fixation â €" low power good fixation â € "average power good fixation â €" average power good fixation â € "high power Formalin concentrations can be kept accurately only if the laboratory and theatrical staff is competent in the correct procedures for dilution and 10% dispensing of formaldehyde concentrated to 40%. 1. Tampons and concentration of hydrogen ions, the pH values of the different fixations vary. Generally, the concentration of hydrogen ions is regulated by a buffer suitable for physiological pH, usually between 6 and 8Ã, many buffer systems are available for fixation; The most common are phosphates, chloride and carbonate salts (or bicarbonate). and pH2. Temperature, the setting of surgical samples takes place at room temperature, although 0-4 degrees centigrade slow down the self-analysis. However, chemical reactions, including fixation, are faster at higher temperatures., Heated formalin At 60 degrees centigrade it is sometimes used for the rapid fixation of urgent biopsy samples, but increases the risk of tissue distortion.3. Penetration of fixations, the penetration of fixations in tissues is clearly an important phenomenon. There, being this relatively slow process, tissue samples must be very small or very thin to obtain optimal fixation. The main factor that It affects the fixation speed ì the thickness of the fabric. face to fixative as soon as possible after removal After 4 hours, 8 hours and 12 hours, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, ã, ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, 10% of formalina Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, Ã, is, Ã Â Ã Â √ Ã Intercellular substances such as collagen swell when they are fixed.Ã¨ Tissues fixed in formaldehyde and incorporated in paraffin can shrink by up to 33%.4.Ã¨ Change in Tissue VolumeTissues tend to change in volume due to changes in transport of tissue. membranes and ions.Ã¨ Some intercellular substances such as collagen swell when they are fixed.Ã¨ Fixed tissues impregnated with paraffin can be reduced by up to 33% 5. ConcentrationÃ¨ This seems to be determined by factors of cost, effectiveness and solubility.Ã¨ The coloration of the tissues changes with the concentration of the fixative used.Ã¨ Formalin is generally used as a 10% solution. 6. Duration The fixation time depends on the size of the specimen; for small biopsies it may take 2-6 hours, but larger tissue samples require fixation overnight.Ã¨ Usually the whole organs are cut to ensure proper fixation.Ã¨ If the tissues are fixed to 10% formalin for 24 hours, most of the fixative It can be washed in water.Ã¨ Although formaldehyde reacts quickly Prolonged fixation in formaldehyde causes tissue to shrink and harden.FIXING AND DECALCIFICATION OF THE BONEFixation is able to protect the bone structure from damage that can be caused acids used as decalcifiers. Fixed specimens may become badly macerated and stained, and long bone fixation times must be performed before decalcification begins. Bone samples should be sawed into thin slices with thin-toothed saws before decalcification. The method is usually carried out between the fixation and processing phases and is essential for a good preparation of the sectioning and is used for bones and other tissues that may contain calcified areas.Ã¨ Ã¨ Different agents have been used to decalcify the tissues, each of which has advantages and disadvantages.Use of acidsStrong mineral acids such as nitric acid and hydrochloric acid are used for dense cortical bone and are often used in mixtures (Table 1). However, strong acids act quickly but also damage cell morphology and bone marrow. Weak organic acids such as acetic and ant are less aggressive and more suitable for bone marrow and other softer tissues (Table 2). 10% formic is the best universal decalcizer, and some solutions combine formic acid with formalin to fix and decalcize tissues. Ã© Ã© Ã© Ã© Table 1. Strong mineral acids Ã© Ã© Ã© Â Â Â Â Â Â Â Â Â Â Table 2. EDTAOtherwise weak organic acids known as ethylndiamine tetracetic acid, it descals Bya capturing calcium ions from the surface of the hydrossiapatite crystal slowly reducing its size. Â The action of EDTA is mild, slow and pH-dependent (usually pH7.0) but works faster at pH10. Â is mainly used for research in areas such as immunocytochemical and molecular biology where sonication can be used to accelerate process descalation.Other methodsElectrolytic - this method involves placing the bone in an acid descalifier and binding it to an electrode through which current is exchange resins applied. Ion - these can be added to the container containing the descaling agent. The resins occupy calcium ions and maintain the effectiveness of the solution decalcification. Surface - this is used for descaling fabrics that have already been embedded. Â blocks are cut to expose calcium and face laid by the acid descalor for short periods. Â this allows a descalifier to penetrate a small distance in the block and dissolve calcium. Fabric that may require surface decal Complete absence of nuclear and intense coloring, poorly differentiated hexin in bone which was over-decalcified determination of the final point of decalcificationIncomplete decalcification can cause excessive distortion of the tissue while over-decalcification, especially with strong acids, will cause problems with coloring basophile elements as cell point nuclei. Â final is obtained in general by X-rays, chemical or physical methods. X-raysThis is the best method for determining the final point, especially for large samples such as femur since X-rays will clearly reveal small residual calcium deposits and allow for further treatment if necessary. Radiographic images of the bone after several times of decalcification MethodA Chemical simple chemical test can be applied when using some acid descaling (especially formic acid) solution oxalate .Â ammonium is added to a sample of the descalifier that has been neutralized with ammonium hydroxide. Â If calcium is present a precipitate of calcium oxalate will form indicating that descalation is probably incomplete and is required a longer time in a descalifier. physical methodPhysical test require manipulation, bending, surveying, or drawing of the test. However, mechanical damage can occur during bending or surveying and small calcium deposits can be easily missed.Â Procedure for determining the final point by carefully weighing test after rinse and absorbent can also be used.Factors influence decalcificationConcentration - this will affect the calcium rate is removed. La la la la la la la la la laIt will be exhausted how much combines with calcium so large volumes and regular renewal is recommended. Temperature, - increase in temperature will accelerate decalcification but also increase the tissue damage rate. Â, Agitation, - Agitation agitation help raise the rate. Fluid access – the decalcizer should have access to all surfaces of the tissue to improve the penetration and removal of calcium. A good decalcifying agent must:* Remove calcium* Have a reasonable speed of action* Causes minimal tissue damage* Produce non-alteration of subsequent stains

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