

Formaldehyde is a naturally-occurring organic compound with the formula CH₂O. It is the simplest aldehyde and is also known by its systematic name methanal. The common name of this substance comes from its similarity and relation to formic acid.

A gas at room temperature, formaldehyde is colorless and has a characteristic pungent, irritating odor. It is an important precursor to many other materials and chemical compounds. In 1996, the installed capacity for the production of formaldehyde was estimated to be 8.7 million tonnes per year.

Commercial solutions of formaldehyde in water, commonly called formol or formalin, were formerly used as disinfectants and for preservation of biological specimens. It is also used for the embalming of human remains. It is commonly used in nail hardeners and/or nail varnish.

In view of its widespread use, toxicity and volatility, exposure to formaldehyde is a significant consideration for human health.

In 2011, the US National Toxicology Program described formaldehyde as “known to be a human carcinogen”.

What is the minimum required time for brain fixation before sectioning?

To avoid mis- or underinterpretation of data. TOPICS

Forensic Pathology Apr 24, 2012

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1 / 0 POPULAR ANSWERS Andrea Zaferes Andrea Zaferes · dutchess county medical examiners office Dr. Dennis Chute, our deputy chief medical examiner who is also a board certified neurologist, stated: “It depends upon the percentage of phosphate buffered formalin one uses to fix the brain and the quantity of formalin put in the bucket, what condition the brain is in (e.g. atrophied brains fix quicker). One to two weeks, preferably the latter, with 10% PBF. ” Apr 30, 2012 ALL ANSWERS (25) Joaquín S. Lucena Joaquín S. Lucena · Universidad de Cádiz The appropriated period for brain fixation before coronal cutting is 2 to 4 weeks. Apr 25, 2012 Nirmeen Ebrahim Nirmeen Ebrahim · Thanks alot for ur kind reply & about wet dissection is it applicable in certain situations? Apr 25, 2012 Hu Yongzhen Hu Yongzhen · Harbin Medical University Two weeks is the shortest period. Apr 25, 2012 Finlay Finlay Finlay Finlay · University of Glasgow If you mean whole brain then the above replies are correct. Obviously slices or sections will be much quicker. Apr 25, 2012 Rehab Samaka Rehab Samaka · Minoufiya University I think you deal with experimental study (animal brain) if this is true, dissect brain into thin slices and fix into 10% formaline for at least 2 hours. Apr 25, 2012 Irene Scheimberg Irene Scheimberg · National Health Service Depends on the age. You can get decent samples in babies and children with 1 week Apr 25, 2012 Mamdouh Zaki Mamdouh Zaki · Forensic Medicine Center, Jeddah, Kingdom of Saudi Arabia The brain should be fixed by suspension in formalin for at least a week.

Some have suggested fixation in very strong formaldehyde solution in order to harden the brain, but the value of this is unclear.

Fixation can be accomplished by suspending the brain by a string passed under the basilar artery or by adding sufficient salt to the formalin to allow the brain to float in the fixation vessel.

When fixation is complete, after washing, the brain may be examined grossly. The perinatal brain is usually quite soft and easily fragmentable; thus, handling should be gentle. The use of a pancake spatula for lifting sections will avoid handling artifacts. The infant brain, though often softer than an adult's, is more easily handled and cut. In addition to searching for any surface lesions, it is important to estimate the developmental age of the brain. This can be done by noting head circumference, the weight of the brain, and the state of development of several surface features. These include the numbers of gyri and the state of closure of the insula by the parietal and frontal opercula. One method that can aid the examiner in estimating the age of a brain between 28 and 37 weeks is to count the number of gyri above a line joining the frontal and occipital poles and passing through the middle of the temporal lobe and then add 21. The sum is an approximation of the gestational age of the infant in weeks.

Apr 25, 2012 Henry Franklin Krous Henry Franklin Krous · Rady Children's Hospital
 I agree with Irene Sheimberg, however, with the caveat that one must first ask the question for which the tissues are being used: microscopic only, or perhaps neurochemistry, etc, in which case the answer changes,

Apr 25, 2012 Robert Bates Robert Bates · US Indian Health Service
 We do 20% formalin fixation for 2 weeks minimum, and if 20% is not available then 10% is used and changed out every 2-3 days for 2 weeks prior to cutting.

Apr 26, 2012 Lorraine du Toit-Prinsloo Lorraine du Toit-Prinsloo · University of Pretoria
 I have had reasonable success with fixation for 1 week - especially if you change the formalin on a daily basis

Apr 26, 2012 Sabeaa Phayad Sabeaa Phayad · Medico-Legal Institute Iraq/ Baghdad
 I will say that if you are talking about routine work, Lorraine's answer will be fine enough, and this is from my practice, but if you are talking about Lab. work, this will depend on the brain kind that you are dealing with.

Apr 26, 2012 Nirmeen Ebrahim Nirmeen Ebrahim · Thank u all for ur kind answers actually i deal with human brain autopsy in related forensic cases i follow the protocol of 2 weeks minimum fixation time in 10% or 20% phosphate buffered formalin with regular changes of formalin & usually not exceeding 4 weeks followed by coronal 1-2cm sectioning with central white matter, water shed areas and regional brain sampling including brain stem & cerebellum and vascularity assesment regarding the time there have been trials mentioned in the literature for fastening it through warming the fixative yet from my work i find 2-3 weeks usually end in proper interpretations

Apr 26, 2012 Stephen Rutherford Stephen Rutherford · Funeral & Mortuary Service. N.Ireland
 Hi, no fixed times for fixing brains, but normally we tend to suspend brain in 10% formalin for around two weeks. When we were doing baby postmortems and time span was short, we fixed the brains in a 20% solution for a few days or up to a week which was not perfect but better than not being able to look at them at all.

Apr 28, 2012 Stephen Rutherford Stephen Rutherford · Funeral & Mortuary Service. N.Ireland
 We were starting to try and micro wave some and compare the both to see better, good or bad?

Apr 28, 2012 Serge Weis Serge Weis · Landesnervenklinik Linz
 One week in 4% formaldehyde solution, the brain being suspended in a plastic container

Apr 30, 2012 Andrea Zaferes Andrea Zaferes · dutchess county medical examiners office
 Dr. Dennis Chute, our deputy chief medical examiner who is also a board certified neurologist, stated: "It depends upon the percentage of phosphate buffered formalin one uses to fix the brain and the quantity of formalin put in the bucket, what condition the brain is in (e.g. atrophied brains fix quicker). One to two weeks, preferably the latter, with 10% PBF."

Apr 30, 2012 Petr Hejna Petr Hejna · Charles University in Prague
 Fixation of the brain takes 5 to 14 days according to its size (infant x adult). We use special spherical container (strainer-like) that is freely suspended with brain in receptacle with 4% formaldehyd solution.

Aug 25, 2012 Rowen Tayag YOLO Rowen Tayag YOLO · University of Santo Tomas Hospital, Espana Blvd, Manila, Philippines
 I agree with almost all of the replies of experienced workers. In our instituion, we use standard 10-20% (I find the 20% strength better- the brain has a more "rubbery consistency") buffered neutral formalin for 10-14 days, with a tissue- fixative ratio of at least 1:20. Fixative is changed every 3-4 days because the formaldehyde strength decrease over time. Brain is suspended with cotton strings to maximize fixative penetration on the bottom of the specimen, and of course, to avoid organ distorsion.

Aug 30, 2012 Dhiraj Nikumbh Dhiraj Nikumbh · ACPM Medical College
 With 10% formalin

use normally ,for brain in hanging condition ,time required is around 2 to 3 weeks. Oct 5, 2012 Stephen Rutherford Stephen Rutherford · Funeral & Mortuary Service. N.Ireland I had been talking to pathologists around the country and their view was that for best results for looking at brains, fixing for up to six weeks is best. But again as I said before, one to two weeks was better than no fixation. Bearing in mind that family mostly wish for all organs to be returned to the body prior to funeral. Nov 4, 2012 Nirmeen Ebrahim Nirmeen Ebrahim · Actually best results i obtained for 4-6 weeks fixation ,yet minimum 2 weeks fixation time with regular formaline change usually give satisfying results & coupe with the urgency for burial & the involved legal investigation authority Nov 4, 2012 Waqas Ahmad Waqas Ahmad · Jilin University there are little concerns with the time of storage for the brain tissues in formalin but it should be kept minimum to avoid cross linking in the immuno-histochemistry. usually, one week fixation is relatively enough for routine histopathological examination.

Apr 1, 2015 Mamdouh Zaki Mamdouh Zaki · Forensic Medicine Center, Jeddah, Kingdom of Saudi Arabia WHAT ABOUT THE SMALL SECTIONS AND CASSETTES ... DOES IT REQUIRE THE SAME TIME?

Apr 1, 2015 Serge Weis Serge Weis · Landesnervenklinik Linz we fix the brain for one week, perform the brain curring and fix the cut blocks in the cassette for another week. A severely edematous brain will still be soft even fixing it for 2-4 weeks. we use 4% formaldehyde fixative.

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