

Myelin staining

Luxol fast blue

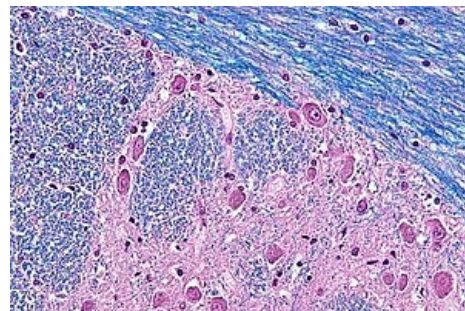
Luxol fast blue (LFB) is a commonly used synthetic dye in light microscopy. It is copper phthalocyanine. LFB reacts with basic components of lipoproteins in myelin sheaths. However, it only reacts with myelin in the central nervous system, so LFB is also used to demonstrate pathological processes in the CNS. He is not able to stain peripheral nerves.^{[1][2]}

After staining, the nerve fibers appear blue, the neurophil pink, and the nerve cells themselves red.

Osmium oxide

Impregnation of myelin with osmium oxide (OsO_4) is used to visualize myelin sheaths. The result is a black color. Osmium oxide is also often used in histology to fix adipose tissue. Among other things, it is used in electron microscopy to increase the contrast during the TEM method, or to create a surface layer of the metal during the SEM method.^[3]

Osmium oxide interacts with the phosphate groups of phospholipids. It is a highly toxic substance, and it is also quite expensive. However, the advantage is the speed of fixation, which surpasses its alternatives.^[4]



A picture of a damaged pons.



Transverse section of a peripheral nerve fixed with osmium oxide.

Retrieved from than-the-common-aldehydes/ Leica Biosystems (<https://www.leicabiosystems.com/pathologyleaders/fixation-and-fixatives-3-fixing-agents-other->).

Resources

1. HUMPHREY, Peter – DEHNER, Louis – PFEIFER, John. *The Washington Manual of Surgical Pathology*. 2. edition. Lippincott Williams & Wilkins, 2008. 784 pp. ISBN 9780781765275.
2. JOCELYN., Bruce-Gregorios. *Histopathologic Techniques*. 1. edition. Goodwill Trading Co., Inc., 2006. 356 pp. ISBN 9789711202705.
3. BOZZOLA, John – RUSSELL, Lonnie. *Electron Microscopy : Principles and Techniques for Biologists*. 2. edition. Jones & Bartlett Learning, 1999. 670 pp. ISBN 9780763701925.
4. Llewellyn, B.D., StainsFile Internet site [online]. c2013 [cit. 2018-5-31]. Available from: <<http://http://stainsfile.info/StainsFile/prepare/fix/agents/osmicsafety.html>