Influence of formaline cacl2 and glycerine application to macroscopic and microscopic structures of the lungs = Efek penggunaan formalin, cacl2, dan gliserin terhadap struktur makroskopis dan mikroskopis paru-paru

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Abstrak

ABSTRAK
Formalin telah digunakan sebagai larutan pengawet untuk kadaver dan organ-organnya untuk waktu yang lama karena efektifitasnya dalam mempertahankan struktur kadaver, selain juga bersifat sebagai disinfektan. Namun, larutan formalin bersifat berbahaya terhadap orang-orang terkait, misalnya staf pengajar, mahasiswa, dan laboran karena sifat iritatifnya yang sangat kuat dan beracun. Karena itu, studi ini dilaksanakan untuk mencari larutan pengawet alternatif berkemampuan sebanding dalam mengawetkan, tetapi dengan efek berbahaya yang lebih rendah atau tidak ada. Larutan pengawet alternatif yang digunakan adalah CaCl2 dan gliserin. Paru diambil dari 36 tikus Sprague-Dawley berusia 6 minggu, setelah mereka di anesthesia dan di injeksi formalin (10% atau 25%) sebagai pengawet primer. Paru yang diambil kemudian diproses lanjut dengan pengawet lanjutan, yaitu larutan standard Departemen Anatomi FKUI sebagai kontrol, CaCl2 15% dan 20%, dan gliserin 70% + timol 0.1%. Organ yang telah diawetkan diobservasi struktur makroskopis (konsistensi) dan struktur mikroskopis. Paru yang diawetkan dengan CaCl2 15% dan CaCl2 20% konsistensinya menurun. Sedangkan paru yang diawetkan dengan larutan standard anatomi dan gliserin 70% + timol 0.1% berhasil dipertahankan konsistensinya atau bahkan lebih keras. Derajat abnormalitas struktur mikroskopis paru yang diawetkan dengan gliserin 70% + timol 0.1% lebih tinggi daripada yang diawetkan dengan larutan standard. CaCl2 terbukti tidak efektif untuk mengawetkan paru. Meskipun paru yang diawetkan dengan gliserin mempunyai struktur mikroskopis yang kurang baik dibandingkan dengan larutan standar, tetapi struktur makroskopisnya bagus.
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ABSTRACT
Formalin has been used as a preservative solution for cadavers and organs for a long time due to its effectiveness in maintaining the structure and disinfectant properties. However, formalin solution tends to be harmful towards the surrounding people, such as teaching staff, students, and lab assistants due to its very irritable and toxic content. Therefore, this study is conducted to find alternative preservative solution with equal preservative effectiveness yet with lesser or even no harmful effects. The selected alternative solution were CaCl2 and glycerine. Lungs organ from a total of 36 six-week-old Sprague-Dawley rats were extracted after the mice were anesthetized and injected with formalin (10% or 25%) for primary preservative purpose. The extracted lungs organs were continued to be preserved in standard solution of Department of Anatomy Faculty of Medicine Universitas Indonesia as control, CaCl2 15% and 20%, and Glycerine 70% + Thymol 0.1%. The preserved organs were observed for macroscopic consistency and microscopic structure. Lungs organs that were preserved with both CaCl2 15% and CaCl2 20% turned out to have weaker consistency than the original. Meanwhile, lung organs which were preserved with standard anatomy preservative solution and glycerine 70% + thymol 0.1% managed to either maintain their original consistency or more

solid, In glycerine 70% + thymol 0.1% solution, the microscopic tissue abnormality were higher than the ones preserved in standard anatomy solution. In conclusion, CaCl2 proved to be an ineffective solution for lungs organ preservation. Even though the microscopic results were not better than formalin solution, lungs organ preserved with glycerine turned to be able to yield good macroscopic results.