

# STEP 13

## Replacement of formalin with alcohol

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After fixation, replace formalin with alcohol for long-term storage of specimens. There are several reasons to replace formalin with alcohol, a couple of which are that 1) formalin produces formic acid on oxidation, which demineralizes hard tissues such as fish bones and 2) formalin causes nose irritation and is very poisonous, which makes prolonged examination of specimens difficult. However, alcohol is more expensive than formalin, and many research organizations actually preserve large specimens, which need a large amount of alcohol, in formalin solution (without replacing with alcohol). When a specimen is to be retained in formalin, add sodium hydrogen carbonate (baking soda) or hexamethylenetetramine in formalin to neutralize formic acid, and then use it to avoid degradation of bony tissue.

If a formalin-fixed specimen is directly placed in alcohol, it can simply be assumed that the same amount of formalin as the volume of the fish will percolate into alcohol, which will later create problems while examination of the specimen. Therefore, the specimen should be first immersed in real water to exude formalin from it. Thereafter, it should be placed in “substitutive alcohol” for several days; used alcohol can be used as substitutive alcohol. At this stage, formalin and real water are completely removed from the specimen and replaced with alcohol. Alcohol used in our museum is “general alcohol; ethyl alcohol, 99 vol%; synthesis, unmodified; 18L TNS.”

Storage

→ Step 14



As the first step of replacing formalin with alcohol, the formalin-fixed specimen is soaked in real water for 1 day to exude formalin from it.