

Rehydration of mummified salamander tissues using fabric conditioner

CHRISTOPHER J. MICHAELS

79 Bradbourne Park Road, Sevenoaks, Kent TN13 3LQ
Author e-mail: c.j.michaels44@gmail.com

Dead amphibians are prone to rapid desiccation and mummification, which may hamper opportunistic specimen collection of rarely encountered species, for example from roadkill or escaped captive animals. Many identification characters require observation of normal tissues and mummified remains may, therefore, be difficult to identify based on morphology. A protocol for rehydrating mummified human tissues, restoring them to the point where fingerprints can be successfully obtained, using an isotonic salt solution combined with Comfort fabric softener, has been developed for human tissues (Turner & Holtom, 1981). I trialled this easily recreated approach to a desiccated amphibian specimen, to trial the extension of this method to amphibians.

An adult (six-year-old) *Echinotriton andersoni* escaped from its vivarium in December 2021 and completely desiccated before being discovered. The body was kept in a cool, dry place until January 2022 and was completely mummified (Fig. 1A). In order to rehydrate the tissues prior to preservation, the protocol described by Turner & Holtom (1981) was trialled. The specimen was submerged for 24 h in a 0.9 % isotonic saline solution with 0.2 % Comfort fabric conditioner ('Comfort', Unilever) at 2 °C, this temperature intended to prevent decomposition of tissues. After 18 h tissues had rehydrated substantially but the solution was failing to penetrate into the core of the specimen so a 15 mm incision was made along the ventral surface of the newt before further submersion for 6 h.

After 24 h, substantial yellow staining had leached into the solution, likely fat, and the specimen had substantially rehydrated, increasing mass from 4.7 g dried to 8 g rehydrated. In life, the animal weighed approximately 10 g. Colours that had faded (red-orange costal wart tips, toe tips and tail margins) were recovered, fleshy morphological characters assumed relatively normal appearance and the specimen was no longer rigid (Figs. 1B & C). However, it had not fully rehydrated and was not fully flexible; eyes remained sunken (Fig. 1C). There was no visible damage to tissues, which is often caused by soaking dried amphibians in water alone due to over-absorption of water in surface tissues. Further submersion was not possible as decomposition would begin to degrade the specimen. The specimen was rinsed, patted dry with paper towel and then preserved in 90 % ethanol.

The rehydration protocol appears to be reasonably

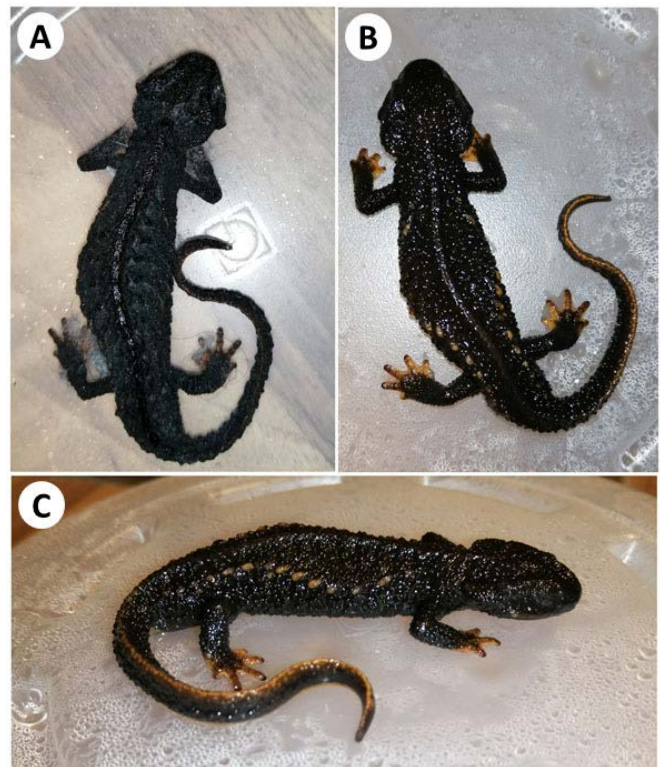


Figure 1. *Echinotriton andersoni* male mummy - **A.** Before, **B.** & **C.** After attempted rehydration with isotonic saline solution with 0.2 % Comfort fabric conditioner

successful in amphibian tissue and may be a useful tool to improve the quality of opportunistically recovered dry specimens. Longer term immersion in the rehydration solution may improve results if some decomposition is acceptable.

REFERENCE

Turner, P.J. & Holtom, D.B. (1981). The use of a fabric softener in the reconstitution of mummified tissue prior to paraffin wax sectioning for light microscopical examination. *Stain Technology* 56: 35–38.

Accepted: 26 January 2022