Plastinated parasites: a new teaching tool for practical lessons in Pharmacy degree

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Introduction

The technique of plastination is usually presented as the most recent and important option for conservation of biological material, preventing the disadvantages of traditional preservers such as formaldehyde (toxicity, retraction of structures, colour changes, carcinogenicity, smell, feeling damp, maintenance requirement, wearing gloves for manipulation, storage, expiry...). Although plastination has been commonly employed in human and veterinary anatomy, it has rarely been used for parasites’ conservation to date.

Material & Methods

Several parasitic specimens were plastinated to obtain samples for Parasitology practical lessons in Pharmacy degree: Arthropods (Oestrus ovis), Nematodes (Parascaris equorum and Ascaris suum), Macracanthorhynchus hirudinaceus, and Plathelminthes (Fasciola hepatica, Dicrocoelium dendriticum and Taenia sp.); Figure 1 [1,2]. The level of knowledge and a satisfaction score employing plastinated specimens versus traditionally preserved parasites (formaldehyde) were evaluated through closed morphological and multiple choice questions (Likert-type scale), respectively. A pre-test of 30 theoretical questions to assure the homogeneity of study groups was carried out [3,4].

Results

The use of plastinated or formaldehyde-fixed parasites during practical lessons was not significantly associated (p>0.05) with the knowledge score test. On the other hand, the satisfaction of students using plastinated parasites was significantly higher (p<0.05) than the one of whom employ conventional samples in terms of the learning comprehension, management of parasites and the overall acceptance of plastinated specimens (Figure 2).

Discussion

Our results indicate that plastination could replace the traditional methodology of parasite conservation. The incorporation of plastinated specimens as educational material will allow us to use dry, odorless, non-irritating, non-carcinogenic and non-toxic material, ensuring a quality and safely education [5].

Questions satisfaction test:

1.- Does the material help you to learn in the practical lesson? (1 = nothing to 5 = very much).
2.- Which is your opinion about the handling of these parasites? (1 = very unuseful to 5 = very useful).
3.- Would you like to have more number and groups of these parasites for use in practical lessons? (1 = nothing to 5 = very much).
4.- How do you evaluate the use of these parasites as teaching tool for practical lessons? (1 = not like at all to 5 = like very much).
5.- Do you recommend the use of these parasites for practical lessons next years? (1 = totally disagree to 5 = totally agree).

Figure 2. Satisfaction test data (mean±SD) for Pharmacy degree employing wet (W) and plastinated (P) specimens in each question (Q).

References