SORTING LABORATORY TECHNIQUES OF SAMPLE PREPARATION BY EFFICIENCY: AN EXAMPLE OF A MIDDLE EOCENE MARL (PODSTINE COVE, ISLAND OF HVAR)

Igor Pejnović,[1,*] Marina Čančar,[1] Štefica Kampić,[1] Vlasta Ćosović [1]

[1] Department of Geology, Faculty of Science, University of Zagreb, Horvatovac 102b, Zagreb, Croatia
* igor.pejnovic@geol.pmf.hr

Marls are mixed carbonate-clay rocks. They are an important component of deep-water flysch deposits. Being rich in microfossils, planktonic foraminifera in particular, they can provide a great variety of data useful for palaeoecological reconstructions. Laboratory preparation of marls is a key step to get good data. In this study, we were looking for the most efficient laboratory techniques. Sample collected at Podstine cove (Hvar is.), was described as a calcite-rich marls. Calcimetry analysis reveals that marls contain 67.78% of calcite ($CaCO_3$), placing it within the realm of marlites [1].The sample was split into three sub-samples, each weighing 200 g. Two sub-samples were treated by standard procedures for marls [2]. One sub-sample was soaked in a mixture of 50 ml of 30% hydrogen peroxide (H_2O_2) with 2 l of water for 24 hours, while the other one was soaked in a mixture of 150 ml of 30% hydrogen peroxide, 1 l of boiling water and 10 g of sodium hydrogen carbonate ($NaHC0_3$), for the next 48 hours. The third sub-sample was repeatedly frozen and then rapidly thawed. This method took 48 hours to be completed. After being wet sieved through a set of meshes, the fraction >125 µm was dried and standardised, using microsplitter, into aliquots of about 300 foraminiferal tests. We identified pristine tests with undamaged wall structure suitable for morphological identification of species from those tests that were damaged or have diagenetically altered wall structure. In the sub-sample treated with hydrogen peroxide the proportion of pristine foraminiferal tests was 47.26%, while in the sub-sample treated by mixture of hydrogen peroxide and sodium hydrogen carbonate 53.28% of the tests were pristine. In the sub-sample treated by freezing and thawing the intact tests made 28.49% of all tests. The low proportion of intact tests obtained by this method makes it unsuitable for studying marlites. Comparing the time required to treat the sub-samples with the amount of foraminiferal tests suitable for further study, we recommend the method of using hydrogen peroxide only. This method is less time-consuming, while producing only a slightly lesser number of suitable tests.

ACKNOWLEDGMENTS

This work was financially supported by the Croatian Science Foundation as part of the project BREEMECO (IP-2019-04-5775).

REFERENCES

[1] J. Tišljar, *Sedimentologija klastičnih i silicijskih taložina*, Institut za geološka istraživanja, Zagreb, 2004, 179-181.

[2] O. R. Green, *A Manual of Practical Laboratory and Field Techniques in Palaeobiology*, Springer, Dordrecht, 2001, 123-153.