Electron Paramagnetic Resonance Study of Defects in γ-irradiated Marine Mussel *(Mytilus galloprovincialis)* and Scallop *(Pecten jacobaeus)* Shells

R. Köseoğlu, F. Köksal[a], and M. Birey[b]

Erciyes University, Halil Bayraktar Health Services Vocational College, Kayseri, Turkey
[a] Ondokuz Mayıs University, Faculty of Arts and Sciences, Physics Department, Samsun, Turkey
[b] Ankara University, Faculty of Sciences, Physics Department, Ankara,Turkey

Reprint requests to Dr. R. K.; Fax: +90-352-437 5936; E-mail: rkoseoglu@erciyes.edu.tr

Z. Naturforsch. **59a,** 773 – 779 (2004); received May 31, 2004

EPR studies have been performed on some gamma-irradiated marine mussels *(Mytilus galloprovincialis)* and scallops *(Pecten jacobaeus)* from the families of *Mytilidae* and *Pectinidae*, respectively. Before γ-irradiation, the EPR lines of *Mytilus galloprovincialis* indicated the existence of Mn^{2+} ions, which were not observed in the powders of scallop shells. γ-irradiation induced defects in powders of *Mytilus galloprovincialis* shells, were attributed to orthorhombic CO_3^-, axial CO_3^{3-}, orthorhombic CO_2^-, freely rotating CO_2^-, freely rotating SO_2^-, axial SO_3^-, isotropic PO_4^{2-} and organic free radicals. γ-irradiation induced defects in powders of *Pecten jacobaeus* shells were attributed to orthorhombic CO_3^-, axial CO_3^{3-}, orthorhombic CO_2^-, freely rotating CO_2^-, freely rotating SO_2^-, and axial SO_3^- free radicals. The EPR parameters of the free radicals were compared with literature data on similar defects.

Key words: EPR; Free Radicals; γ-irradiation; Mussel; Scallop.