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Quaternary marine terrace deposits geochronology, eastern Mediterranean, Turkey, using amino acid racemization and electron spin resonance age evidence from molluscs

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The coastal area in the eastern Mediterranean presents a deformed system of raised coastal deposits, some of which have been affected by active tectonics. Tectonic uplift coupled with Quaternary sea-level fluctuations has produced several stacked marine terraces at elevations between $\sim$ 3 and $\sim$ 175 m along the eastern Mediterranean coast. The use of amino acid racemization (AAR) of marine molluscs from coast sites allowed determining the age of the marine terrace deposits, all of them linked to highstand sea levels in the Mediterranean realm. In this study, we present the first comprehensive aminostratigraphy results from marine terrace sites and their combination with numerical dating in the study area. The results allowed corroborating the age of some previously studied sites, and using electron spin resonance (ESR) dating, the general aminostratigraphy for the Quaternary raised marine terrace deposits was confirmed with ages between Marine Isotopic Stage (MIS) 7 and MIS 2. The ESR ages ranged from $\sim$ 12 to $\sim$ 214 ka are consistent with glumatic acid D/L values from observed for taxonomic differences in racemization rates. The aminozones from oldest to youngest found for eastern Mediterranean sites also support the reliability of the ESR ages. Based on age data we interpret that the activity of the local active faults rather than main deformation event mainly uplifted these deposits due to successive tectonic movements and sea-level fluctuations in this region. Results obtained in this study indicate that the application of the method of AAR dating of molluscs has the potential to contribute and reference the geochronological investigation in different areas of the Mediterranean coast.