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Metasomatic overprint of CO_2-rich fluids/melts from altered oceanic crust and subducted Triassic plume-influenced volcanics via shallow oceanic subduction of Cyprus arc, and remobilization of EM-II type mantle metasomes beneath Isparta Angle, SW Turkey

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Episodic extensional basins of Isparta Angle (SW Turkey) host similar post-collisional mafic (Si-poor and Si-rich) potassic rock types (e.g., lamproite, leucite-basalt, lamprophyre, absarokite, shoshonite) with contrasting geochemical signatures within the distinct geographical locations (e.g. orogenic-types at north, transitional-types at centre and anorogenic-types at centre and south) in a back-arc position. Such contrasting magmas producing these rock series can be evaluated into two groups from north to south: i) older (Early-Late Miocene) orogenic (Si-rich and Si-poor) mafic potassic magmas in the northern Kırka, Afyon, Sandıklı extensional basins, and ii) younger (Late Miocene-Plio-Quaternary) transitional to anorogenic (Si-poor) mafic potassic magmas in the central Isparta and southern Bucak extensional basins. Accordingly, relative to the wide variation of $^{87-86}$Sr isotopic compositions in northern orogenic magmas, Nd-Pb isotopic variations reflect a gradual decrease in $^{207-208}$Pb with an increasing ^{206}Pb and $^{143/144}$Nd ratios from north to south, relatively. Similarly, in contrast to the those of young transitional to anorogenic magmas with FOZO-like mantle signature, geochemical and isotopic variations of older orogenic magmas suggest a crust-contaminated, subduction-modified (metasomatised) EM-II type mantle source, interacting with asthenosphere. It is inferred that carbonate wall-rock assimilation for orogenic Si-poor potassic magmas and carbonate-free wall-rock assimilation for orogenic Si-rich potassic magmas played a significant role during their evolution, as well as source contamination. The striking geochemical and isotopic variations of overlapping post-collisional older orogenic and younger transitional to anorogenic potassic magmas also reflect the geochemical imprints of distinct metasomatic agents in mantle metasomes beneath northern orogenic, central transitional and southern anorogenic volcanic centres. We propose that the metasomatic enrichment mechanism of the mantle metasomes beneath the southern transitional to anorogenic volcanic centres can be explained by the remobilization and overprinting of CO_2-rich FOZO-like metasomatic melts/fluids, released by partial melting of altered oceanic crust and subducted Triassic plume-influenced materials (e.g., Triassic-Early Cretaceous alkali basalts with HIMU signature), into the pre-existing EM-II type orogenic mantle metasomes during shallow oceanic subduction of Cyprus arc (between Late Miocene and Plio-Quaternary). Remelting of this remobilized mantle metasomes (producing ultrapotassic melts), followed by mixing with asthenospheric magmas, have produced transitional-anorogenic potassic magmas with FOZO-like mantle signature, under an extensional tectonic.