Late Mesozoic (155-105 Ma) granitoids are widespread in the East Qinling orogen. Twenty one new and 77 published whole-rock Nd isotopes and 7 new and 22 published zircon Hf isotopes of these granitoids were used for isotopic mapping to investigate variations of their isotopic compositions and sources. Generally, whole-rock $\varepsilon^{\text{Nd}}(t)$ values range from -22.1 to -1.5, and the correspondingly Nd model ages ($T_{\text{DM}}$) from 2.83 to 0.79 Ga. Zircon $\varepsilon^{\text{Hf}}(t)$ values and two-stage Hf model ages ($T_{\text{DM2}}$) are -43.3 to 1.8 and 3.98 to 0.85 Ga, respectively. These suggest that the heterogeneous sources, mainly old crust with juvenile components are for the granitoids. Moreover, their isotopic variations can be divided into three provinces from the north to south: (a) $\varepsilon^{\text{Nd}}(t)$ values range from -22.1 to -10.9 with $T_{\text{DM}}$ of 2.82 to 1.47 Ga, and $\varepsilon^{\text{Hf}}(t)$ values -43.3 to -6.1 with $T_{\text{DM2}}$ 3.98 to 1.47 Ga; (b) $\varepsilon^{\text{Nd}}(t)$ values -13.9 to -1.5 with $T_{\text{DM}}$ 2.02 to 0.79 Ga, and $\varepsilon^{\text{Hf}}(t)$ values -30.7 to -1.7 with $T_{\text{DM2}}$ 3.05 to 0.85 Ga; and (c) $\varepsilon^{\text{Nd}}(t)$ values -6.3 to -4.5 with $T_{\text{DM}}$ 1.28 to 1.12 Ga, and $\varepsilon^{\text{Hf}}(t)$ values -4.5 to 1.8 with $T_{\text{DM2}}$ 1.48 to 1.08 Ga, respectively. The three provinces correspond to the southern margin of the North China Block (NCB), the North Qinling Belt (NQB) and the South Qinling Belt (SQB), respectively. These demonstrate that the granitoids in different terranes have different sources and their juvenile source components become more from the north (southern margin of the NCB) to the south (SQB). These also reveal the basement nature of the terranes in Late Mesozoic. The southern margin of the NCB contains widespread Neoarchean to Paleoproterozoic basement, the NQB Archaean to Neoproterozoic basement and the SQB Mesoproterozoic to Neoproterozoic basement (or contains higher proportion of juvenile crust). These indicate that the basement rocks of the southern margin of the NCB are older than those of the SQB, and the NQB has complex basement. All these suggest that these terranes underwent different geological processes and the Qinling orogen is different from typical accretion orogen characterized by insignificant Phanerozoic crustal growth. The sources of the granitoids and basements of the terranes constrain the distribution, scale and number of the Mo mineralization and deposits. Mo mineralization is closely related to the granitoids with old continental component sources and Mo deposits are mainly hosted by the terranes with oldest basement. The scale and number of the Mo mineralization and deposits decreased from the southern margin of the NCB to SQB.

Key words: Granitoid, Nd-Hf isotope, source, basement, Mo deposit

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