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Petrographic properties of Middle Pleistocene tephra layers in the central part of the Kanto Plain

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The basic stratigraphy of the Pleistocene Kazusa and Shimosa groups beneath the central part of the Kanto Plain has been well documented, but there are very few studies on tephrochronology. We examined petrographic properties of tephra layers intercalated in Middle Pleistocene sediment cores from Koshigaya and Yashio and in the coeval outcrop of volcanic ash soil on the Odamaki Hill, Saitama Prefecture, central Japan. Examined petrographic properties include grain size, mineral composition, and refractive index of volcanic glass, hornblende, and orthopyroxene.

Our detailed examination reveals that the sediment cores intercalate three well-known, widespread tephras such as TE-5, Kh6, and Ks11. We also found seven potential marker tephras such as YS2-S3, YS2-S4, YS2-S6, YS2-S7, YS3-S11, and YS3-S13 in the Yashio core and OD1 on the Odamaki Hill, which mostly exhibit peculiar refractive indices. In addition, a stratigraphic interval intercalating abundant hornblende-type tephras even similar to each other can be regarded as a useful tephra zone for stratal correlation.

Keywords: tephrochronology, Pleistocene, Kazusa Group, Shimosa Group