To ensure an efficient use of CARMENES observing time, and the highest chances of success, it is necessary first to select the most promising targets. To achieve this, we are observing ~500 M dwarfs at high-resolution (R = 30,000-48,000), from which we determine the projected rotational velocity $v_{\text{sin}i}$ with an accuracy better than 0.5-0.2 km/s and radial-velocity stability better than 0.2-0.1 km/s. Our aim is to have at least two spectra at different epochs of the final 300 CARMENES targets. Our observations with FEROS at ESO/MPG 2.2m La Silla, CAFE at 2.2m Calar Alto and HRS at Hobby Eberly Telescope allow us to identify single- and double-line spectroscopic binaries and, especially, fast rotators, which should be discarded from the target list for exoplanet searches. Here we present preliminary results.