Q34b ^{13}C Isotopic Fractionation of HC_3N toward L1527

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We carried out observations of three ^{13}C isotopologues of HC_3N using the $J = 10 - 9$ rotational transition at the 90 GHz toward the low-mass star forming core L1527 in Taurus with the Nobeyama 45-m telescope. The main purpose is to determine the main formation mechanisms of HC_3N. The preliminary results in L1527 are [H^{13}CCCN]:[HC^{13}CCN]:[HCC^{13}CN] = 1.0 : 3.0 : 3.0 ($\pm$0.7) using their integrated intensities. These results are different from those in the low-mass starless core TMC-1 in Taurus ([H^{13}CCCN]:[HC^{13}CCN]:[HCC^{13}CN] = 1.0 : 1.0 : 1.4 ($\pm$0.2)). While the neutral-neural reaction between C_2H_2 and CN is thought to be the dominant formation pathway of HC_3N in TMC-1, we consider that molecules or ions which have two equivalent carbon atoms and different one carbon atom such as *cyclic*-C_3H_2 may contribute to formation of HC_3N in L1527. These results allow us to confirm that carbon-chain molecules in L1527 are not remaining survivors from starless cores, but are newly formed in the warm region (Warm Carbon-Chain Chemistry), because the characteristics of abundance ratios are conclusively different between two sources. In addition, we compare the results with IRC+10216 and massive-star forming region G28.28-0.36, and discuss differences of chemistry in each source based on the main formation mechanisms of HC_3N.