The first gas phase rotational spectrum of ephedrine, a synthetic analog of the neurotransmitter adrenaline with similar effects on the cardiovascular system, has been observed using a molecular beam Fourier transform microwave spectrometer. Solid ephedrine (m.p. 36 °C) was vaporized by heating it in a reservoir located in pulsed valve. In these conditions the three lowest-energy conformers of ephedrine have been detected. Hyperfine structure due to the presence of a $^{14}$N nucleus ($I = 1$) has been observed for all conformers, allowing the unambiguous assignment of their spectra.

Microwave spectroscopy in supersonic jets has been also applied to the conformational and structural analysis of the p-methoxypheylamine molecule. The rotational spectra of the seven conformers previously observed by Pratt et al. have been unambiguously assigned on the basis of the values of their rotational and nuclear quadrupole coupling constants. The predictions of $ab$ initio calculations have been used as guidelines.

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