

THE SHAPE OF PROGESTERONE

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Solid samples of progesterone (m.p. 126°C), one of the essential hormones, have been vaporized by laser ablation and probed in a supersonic expansion using a broadband Fourier transform microwave spectroscopy. The analysis of around 150 rotational transitions revealed the existence of a single conformation. Like for the related testosterone^a, progesterone adopts an extended configuration which is the most stable form predicted by quantum-chemical calculations. Due to the methyl group internal rotation, *A–E* splittings have been observed and allowed for the precise determination of the barrier height. The considerable molecular size of progesterone, one of the largest ever attempted solid, illustrates the potential of the LA-CP-FTMW^b technique in structural chemistry.

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