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(71) Applicant *(for all designated States except US)*: RANBAXY LABORATORIES LIMITED [IN/IN]; 19 Nehru Place, New Delhi 110 019 (IN).

(71)(72) Applicants and Inventors: TALWAR, Naresh [IN/IN]; L–48–B, Malviya Nagar, New Delhi 110 017 (IN). SEN, Himadri [IN/IN]; D–1/25, Qutab Enclave–1, Haryana 122 001 (IN). STANIFORTH, John, H. [GB/GB]; High Trees, 170 Bloomfield Road, Bath BA2 2AU (GB).

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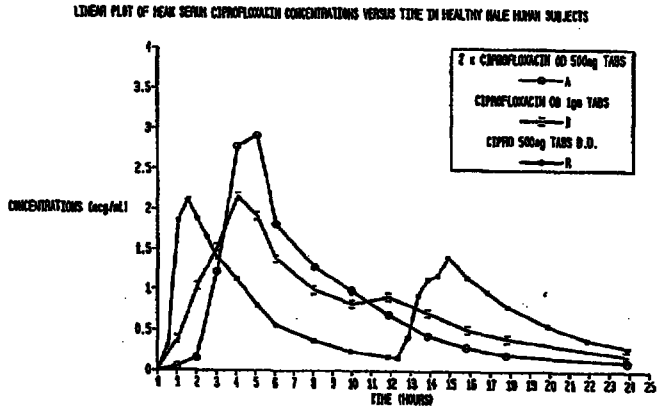

(57) Abstract

A pharmaceutical composition in the form of tablets or capsules provides a combination of temporal and spatial control of drug delivery to a patient for effective therapeutic results. The pharmaceutical composition comprises a drug, a gas generating component, a swelling agent, a viscolyzing agent, and optionally a gel forming polymer. The swelling agent belongs to a class of compounds known as superdisintegrants (e.g., cross–linked polyvinylpyrrolidone or sodium carboxymethylcellulose). The viscolyzing agent initially and the gel forming polymer thereafter form a hydrated gel matrix which entraps the gas, causing the tablet or capsule to float so that it is retained in the stomach or upper part of the small intestine (spatial control). At the same time, the hydrated gel matrix creates a tortuous diffusion path for the drug, resulting in sustained release of the drug (temporal control). A preferred once daily ciprofloxacin formulation comprises 69.9 % ciprofloxacin base, 0.34 % sodium alginate, 1.03 % xanthan gum, 13.7 % sodium bicarbonate, 12.1 % cross–linked polyvinylpyrrolidone, and optionally other pharmaceutical excipients, the formulation being in the form of a coated or uncoated tablet or capsule.