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Dynamics in Chemotaxis Models of Parabolic-Elliptic Type on Bounded Domain with Time and Space Dependent Logistic Sources.

This paper considers the dynamics of a chemotaxis system of parabolic-elliptic type with local as well as nonlocal time and space dependent logistic source on bounded domains. We first prove the local existence and uniqueness of classical solutions for various initial functions. Next, under some explicit conditions on the coefficients, the chemotaxis sensitivity χ and the space dimension n , we prove the global existence and boundedness of classical solutions with certain given integrable or uniformly continuous nonnegative initial functions. Then, under the same conditions for the global existence, we show that the system has an entire positive classical solution. Finally, under some further explicit assumptions, we prove that the system has a unique entire positive solution which is globally stable. Furthermore, if the coefficients are periodic or almost periodic in t , then the unique entire positive solution is also periodic or almost periodic in t . (Received September 18, 2018)