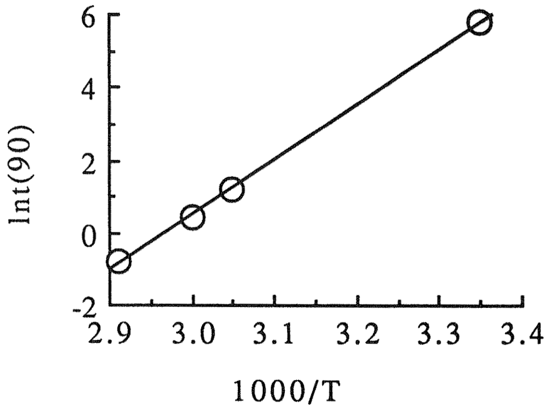

Fig. 12 Decomposition of *a*-chymotrypsin tablet. ln[t_{90}] plotted in Arrhenius fashion. The neat decomposition is not an integer order. (Graph constructed from data published by Yoshioka et al., 1994.)

An example is the work by Pudapeddi et al. (1992), who showed that sulfites act in a quantitative manner. Once the sulfites are consumed, the oxidation starts. Gonçalves et al. (1998) have reported on the antioxidant activity of 5-aminosalicylic acid in the presence of vitamins C and E of lipid peroxidation. They show typical S-shaped decomposition curves. Chakrabarti et al. (1993) have shown that hydroquinone, butylated deoxycholate, and ascorbyl palmitate stabilizes hyamycin (a polyene antifungal antibiotic).

Antioxidants can also act by interfering in e.g. the reaction schemes shown in Eqs. (4.2–4.11) so that the oxidative pathway is interrupted. In such a case they will themselves be regenerated, and will function in a manner independent of elapsed time. The most common antioxidants used are ascorbic acid, BHA, BHT, and sodium sulfite. The use of ethylene diamine tetraacetic acid as a chelator has already been mentioned.

4. OTHER WORK

The first step in oxidative (and any other) kinetic investigation is decomposition product identification. It is then possible later to study the kinetics of the system. For instance, Hooijmaaijer et al. (1999) have studied the peroxide catalyzed degradation of mocophenolate mofetyl in aqueous solution and have characterized the decomposition products.

As mentioned, until recently, the number of reports on oxidation in the pharmaceutical literature were scarce, but the gap is being filled. For instance, Bosca et al. (1992a) have described the oxidative decarboxylation of naproxen, and Bosca et al. (1992b) have described the photochemical byproducts. Vargas et al. (1992) have described the photochemical oxidation in light of nifedipine. Tereoka et al. (1993) have described the oxidation of ranitidine in acetate buffer.