Study of healing effects of irsogladine maleate-containing formulations for acetic acid-induced oral stomatitis in Syrian golden hamsters

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Oral stomatitis is one of the adverse events induced by 5-fluorouracil (5-FU). The healing effects of irsogladine maleate (IM), a therapeutic agent for stomach ulcer, were examined on oral stomatitis with 5-FU. The oral stomatitis model in the cheek pouch were produced by submucosal injection of 25 μ L of 10% acetic acid solution in male Syrian golden hamsters anesthetized with pentobarbital 30 mg/kg i.p. on day -2. 5-FU was injected at 60 mg/kg/day i.p. on days -4 and -2. In the IM application group, 0.2 mL of IM solution or vehicle was started from day 0 to the oral mucosa of the cheek pouch. Application of 1.2 mg/mL IM solution significantly reduced the areas of injury in 5-FU-untreated animals. Application of 1.2 mg/mL IM suspension in sodium carboxymethylcellulose (CMC-Na) solution did not reduce the area of oral injury in this model, and no reduction was observed upon p.o. administration of 1.2 and 4.0 mg/mL IM solution. The areas of oral injury in 5-FU-treated animals were significantly larger than those in 5-FU-untreated animals. The period required for the area of oral injury to be reduced to 50% was about 4.9 and 3.9 days in the 5-FU-treated and -untreated animals, respectively. Application of 4.0 mg/mL IM solution significantly reduced the area of injury in the 5-FU-treated animals. In addition, 4.0 mg/mL IM in a solution containing gum ghatti to increase viscosity and retention reduced the area of oral injury significantly. However, p.o. administration of 1.2 or 4.0 mg/mL IM in gum ghatti-containing solution had no reduction effects. These results suggest that application of IM reduces the area of oral injury in acetic acid-induced oral stomatitis developing under both 5-FU-treated and -untreated conditions.