

Title

Prevention of postoperative intraperitoneal adhesion by a Pectin-Honey Hydrogel

Gessica Giusto, Cristina Vercelli, Andrea Audisio, Rosangela Odore, Emanuela Morello, Selina Iussich, Marco Gandini

Keywords: adhesions, honey, rat

Background: Adhesions formation are postoperative surgical complications. Liquid honey has been used intraperitoneally to reduce their incidence. Since solid barriers are considered more effective than solutions in decreasing postoperative intra abdominal adhesion formation, a new pectin-honey hydrogel (PHH) was produced and its effectiveness evaluated in a rat cecal abrasion model.

Material and Methods: Standardized cecal/peritoneal abrasion was performed through laparotomy in n° 48 Sprague Dawley adult rats to induce peritoneal adhesions. Rats were randomly assigned to a control (C) and a treatment (T) group. In group T, PHH was placed between the injured peritoneum and cecum. Animals were sacrificed post surgery at day 15. Adhesions were evaluated macroscopically and adhesion score recorded and compared among groups. Inflammation, fibrosis and neovascularization were histologically graded and compared.

Results: In group C 17 out of 24 (70.8%) animals developed adhesions between cecum and peritoneum, while in group T only 5 out of 24 (20,8%) did ($p=0.0012$). In group C one rat had adhesion score 3, sixteen had score 2, and seven rats had score 0. In group T four rats had adhesion score 2 and one rat had an adhesion score 1. Significant lower grades of inflammation, fibrosis, and neovascularization were seen in group T ($p= 0.007$, $p=0.001$, $p=0.002$, respectively).

Conclusion: PHH is a novel absorbable barrier that proved effective in abdominal adhesions prevention in a cecal abrasion model in rats.