

## INTISARI

**Pendahuluan.** Kanker kolorektal (KKR) adalah kanker tersering ke-3 dan penyebab kematian ke-2 terkait kanker di dunia. KKR sporadis adalah KKR yang tidak dikaitkan dengan turunan genetik ataupun riwayat keluarga, merupakan subtype yang paling sering terjadi dengan insidensi sekitar 75%. Perkembangan tumor sangat bergantung pada interaksi erat antara sel tumor dengan sel-sel lain pada lingkungan mikro tumor (*tumor microenvironment/TME*), yang interaksinya sangat dipengaruhi oleh proses inflamasi. Perilaku sel tumor berbeda dari sel normal karena adanya mutasi pada beberapa gen penyandi protein penting. Protein YAP1 memengaruhi proses pembentukan tumor dalam jaringan yang mengalami inflamasi, dengan cara menghambat ekspresi PTEN yang kemudian berpengaruh dalam progresi tumor terkait dengan penghindaran terhadap sistem imun.

**Tujuan.** Mengkaji perbedaan derajat inflamasi, ekspresi YAP1, dan PTEN, serta hubungan antara ketiganya pada jaringan tumor tikus model kanker kolorektal yang diinduksi 1,2-dimethylhydrazine (DMH) dengan tikus kontrol

**Metode.** Delapan belas tikus jantan galur Sprague Dawley dibagi menjadi dua kelompok, yaitu kelompok kontrol sehat dan kanker kolorektal (induksi DMH). Derajat inflamasi diperiksa pada jaringan yang diwarnai dengan hematoksilin-eosin (HE), ekspresi YAP1 dan PTEN diperiksa pada jaringan yang diwarnai dengan metode imunohistokimia (IHK).

**Hasil.** Derajat inflamasi kelompok DMH lebih tinggi daripada kelompok kontrol ( $p=0,002$ ). Tidak terdapat perbedaan tingkat ekspresi YAP1 dan PTEN pada kelompok DMH dibandingkan kelompok kontrol ( $p>0,05$ ). Tidak terdapat korelasi antara derajat inflamasi dan ekspresi YAP1, derajat inflamasi dan ekspresi PTEN, serta ekspresi YAP1 dan PTEN ( $p>0,05$ )

**Kesimpulan.** Derajat inflamasi pada jaringan tikus model KKR yang diinduksi DMH lebih tinggi daripada kontrol, tetapi tidak terdapat perbedaan ekspresi YAP1 serta PTEN pada kelompok DMH dan kontrol. Tidak terdapat korelasi antara derajat inflamasi, ekspresi YAP1, dan PTEN pada jaringan tikus model KKR yang diinduksi DMH

**Kata kunci:** kanker kolorektal, inflamasi, YAP1, PTEN, dimethylhydrazine

## ABSTRACT

**Background.** *Colorectal cancer (CRC) is the third most common cancer-related disease in the world and second leading cause of cancer-associated death. Sporadic CRC refers to CRC that is not associated with genetic inheritance or family history, representing the most common subtype with an incidence of approximately 75%. Tumor development depends on the close interaction between tumor cells and other cells within the tumor microenvironment (TME), where these interactions are significantly influenced by inflammatory processes. Tumor cells exhibit behavior distinct from normal cells due to mutations in several genes encoding essential proteins. The YAP1 protein plays a role in tumor formation within inflamed tissues by inhibiting PTEN expression, thereby contributing to tumor progression related to immune evasion.*

**Objectives.** *The aim of this study is to compare inflammation level, YAP1 expression, and PTEN expression, as well as their relationship in tumor tissue of a colorectal cancer rat model induced by 1,2-dimethylhydrazine (DMH) and control rats.*

**Methods.** *Eighteen male Sprague Dawley rats were divided into two groups: a healthy control group and a colorectal cancer group (induced by DMH). The degree of inflammation was assessed in tissues stained with hematoxylin-eosin (HE), while YAP1 and PTEN expression were evaluated using the immunohistochemistry (IHC) method.*

**Results.** *The DMH-induced group showed significantly higher inflammation levels compared to the control group ( $p=0.002$ ). However, there were no significant differences in YAP1 and PTEN expression levels between the DMH and control groups ( $p>0.05$ ). Additionally, no correlation was found between inflammation levels and YAP1 expression, inflammation levels and PTEN expression, or between YAP1 and PTEN expression ( $p>0.05$ ).*

**Conclusions.** *Inflammation levels in the tissues of the DMH-induced CRC rat model were higher than those in the control group. However, there were no differences in YAP1 and PTEN expression levels between the two groups, and no correlation was observed between inflammation levels, YAP1 expression, and PTEN expression in the DMH-induced CRC rat model.*

**Keywords:** *colorectal cancer, inflammation, YAP1, PTEN, dimethylhydrazine*