

LAXATIVE ACTIVITY OF BROADLEAF PLANTAIN (Plantago major) IN THE COLON OF NON-CONSTIPATED **SPRAGUE-DAWLEY RATS (Rattus norvegicus)**

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SCHOOL OF VETERINARY MEDICINE AND BIOMEDICAL SCIENCES **IPB UNIVERSITY** PB **BOGOR** 2025





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ABSTRACT

NAURA ARRAUDHA. LAXATIVE ACTIVITY **ATHIRA** BROADLEAF PLANTAIN (Plantago major) IN THE COLON OF NON-CONSTIPATED SPRAGUE-DAWLEY RATS (Rattus norvegicus). Supervised by SITI SADIAH and HERA MAHESWARI.

Laxatives are a class of medication used to treat constipation, empty the gastrointestinal tract as a pre-operative procedure, and support gastrointestinal function recovery during post-operative treatment. Broadleaf plantain (*Plantago* major) has been proven to exhibit laxative effects in constipated conditions. This research aims to analyze the laxative potential of *Plantago major* leaf extract in the colon of non-constipated Sprague-Dawley rats. The rats were divided into 5 treatment groups, which included a normal control, a bisacodyl control, and 3 dosages of Plantago major leaf extract at 50 mg/kg body weight (BW), 100 mg/kg (BW), and 200 mg/kg (BW), respectively. The colon was prepared as histological slides stained with Hematoxylin-Eosin (HE), Alcian Blue (AB), and Periodic Acid Schiff (PAS). The results were observed by measuring parameters of goblet cell number, goblet cell area, and intensity of AB and PAS staining. This study demonstrated that 50-200 mg/kg Plantago major extract increased goblet cell number, goblet cell area, and mucin secretion in non-constipated rats, suggesting its potential as a mild laxative for gastrointestinal support.

Keywords: broadleaf plantain, colon, goblet cell, laxative, Plantago major

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ABSTRAK

NAURA ATHIRA ARRAUDHA. AKTIVITAS LAKSATIF DAUN SENDOK (*Plantago major*) PADA KOLON TIKUS SPRAGUE-DAWLEY NON-KONSTIPASI (*Rattus norvegicus*). Dibimbing oleh SITI SA'DIAH dan HERA MAHESWARI.

Laksatif adalah golongan obat yang digunakan untuk konstipasi, pengosongan saluran pencernaan pre-operasi, dan membantu pemulihan fungsi saluran pencernaan pasca-operasi. Daun sendok (*Plantago major*) telah terbukti memiliki efek laksatif pada kondisi konstipasi. Penelitian ini bertujuan untuk menganalisis potensi laksatif dari ekstrak daun *Plantago major* yang spesifik pada histologi kolon tikus Sprague-Dawley yang non-konstipasi. Tikus dibagi 5 kelompok perlakuan, yaitu kontrol normal, kontrol bisacodyl dan kelompok dosis ekstrak daun *Plantago major* berturut-turut 50 mg/kg BB, 100 mg/kg BB, dan 200 mg/kg BB. Preparat histologi diwarnai *Hematoxylin-Eosin* (HE), *Alcian Blue* (AB), dan *Periodic Acid Schiff* (PAS). Hasil diamati melalui jumlah sel goblet, luasan sel goblet, dan intensitas pewarnaan AB dan PAS. Penelitian ini menunjukkan bahwa ekstrak daun *Plantago major* dosis 50-200 mg/kg BB meningkatkan sel goblet, luasan sel goblet, dan sekresi mucin pada tikus non-konstipasi, mengindikasikan potensinya sebagai laksatif ringan dalam mendukung saluran pencernaan.

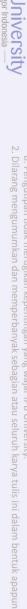
Kata kunci: daun sendok, kolon, laksatif, Plantago major, sel goblet



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NAURA ATHIRA ARRAUDHA

Thesis as one of the requirements for obtaining a degree Bachelor of Veterinary Medicine School of Veterinary Medicine and Biomedical Sciences

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The author welcomes constructive criticism and suggestions for further improving this thesis. The author also hopes that this thesis will benefit those who need it and for scientific progress.

Bogor, July 2025

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