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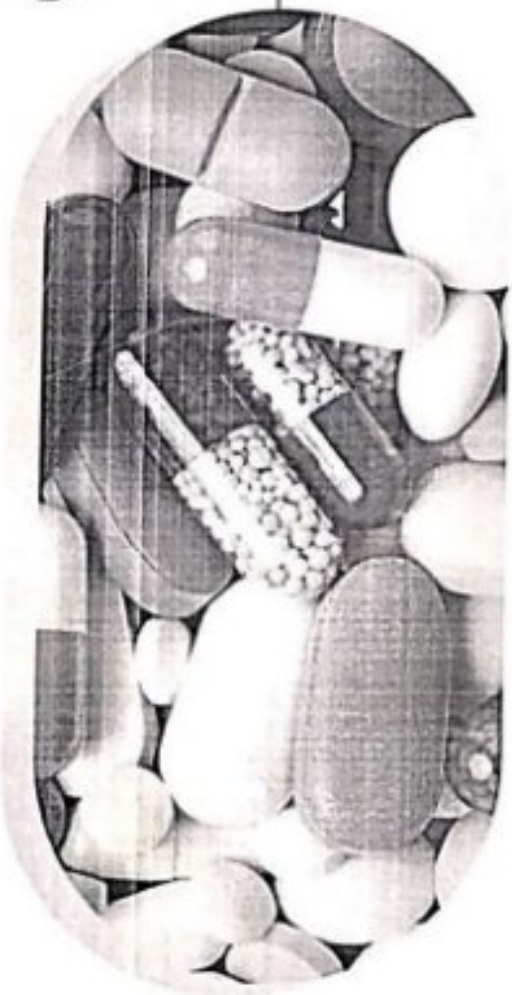

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PHARMA INDUSTRIAL REVOLUTION: IMPACT ON INDIA AND CANADA

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Abstract:

The pharmaceutical industry has undergone a significant transformation, often referred to as the "Pharma Industrial Revolution," which has dramatically impacted countries worldwide, including India and Canada. This book chapter explores the profound effects of this revolution on both nations, highlighting the changes in their pharmaceutical sectors, healthcare systems, and economic landscapes. We delve into the historical context, key drivers of change, and the roles of government policies and global market dynamics. Additionally, the chapter examines the social, ethical, and economic implications, providing a detailed comparative analysis of how India and Canada have navigated the challenges and opportunities presented by the evolving pharmaceutical landscape.

Keywords: Pharma Industrial Revolution, Pharmaceutical Industry Transformation, India Pharmaceutical Growth, Canada Pharmaceutical Innovation, Globalization and Market Dynamics.

Introduction:

The pharmaceutical industry has experienced rapid advancements due to technological innovations, regulatory changes, and globalization. This chapter focuses on how these developments, collectively known as the Pharma Industrial Revolution, have influenced India and Canada, two countries with distinct pharmaceutical landscapes.

The pharmaceutical industry has undergone a transformative evolution, often referred to as the Pharma Industrial Revolution, driven by advancements in technology, research, and global collaboration. This revolution has profoundly impacted nations worldwide, including India and Canada, reshaping their healthcare landscapes and economic structures. In India, the revolution has catalyzed the growth of a robust generic drug market, making it a global leader in pharmaceutical production and significantly improving access to affordable medications. Simultaneously, Canada's pharmaceutical

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About the Author

Dr. Deeparani Urolagin is an esteemed professional serving as professor and HOD, department of pharmacology in R R College of pharmacy, Bangalore, Karnataka having the relevant experience of 15 years in the teaching field has immensively contributed with research work and published with 50 research papers in National and International Journal and also presented 28 oral presentations at National and International level conferences, 1 chapter in the book and received Best oral presentation twice. Being specialized in the field of pharmacology guided 25 M Pharma and 13 UG students. In addition to this Dr. Deepa rani has been awarded for her PhD work (Patent granted) with the fastest female applicant process in year 2023, best Researcher National award 2023 by Chennai teachers council and excellence of reviewing award from European Journal of Nutrition and Food safety, recieved Sponsorship from KSPC, RGUHS for organizing conference, UG Research grants from RGUHS and also serving as PCI Inspector since 2022, Member secretory and Animal house in- charge, IAEC, R R college of Pharmacy, Bangalore and also holds the various patents.

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Human Anatomy and Physiology For Pharm D and B Pharm

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R R Pharmacon-2024 at R R College of Pharmacy, Bangalore-90.

EVALUATION OF WOUND HEALING ACTIVITY OF HERBAL NANO GEL FORMULATION IN WISTAR RAT MODEL

Ansari Aashif Raza Mohd Imtiyaz [1], Dr. Deeparani Urolagin[2]

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ABSTRACT

The wound-healing activity was carried out in Wistar rats using an excisional wound model.

Method: The experiments are conducted with a 9-week-old adult Wistar rat weighing 150- 200 gm. The wounds were created in the animals. the dorsal fur of the rats was shaved with an electric clipper. Full-thickness skin of 2 mm depth and circular area 2 cm x 2 cm was excised along the impression. Wounds were induced on the skin of male Wistar rats. The formulations were applied daily over the wound surface for the treatment groups for 15 days. All wound contraction was calculated by tracing out the wound surface every 0th, 3rd, 7th, 11th, and 15th days. Wound-healing all parameters were evaluated.

Result: The effect of Nanogel formulation shows a significantly reduced period of epithelialization and increased tensile strength and wound contraction rate compared to the control group.

Conclusion: The study concluded that the developed Nanogel Formulation possesses wound-healing activities. Nanogel formulations show promise for wound healing due to their controlled drug release and enhanced tissue regeneration properties, offering potential as effective and versatile therapeutic agents in the field of wound care. Further research and clinical trials are needed to fully explore their efficacy and safety for widespread application in clinical settings.

Keywords: Nanogel, Wound Healing, Excisional Wound Model, Tensile Strength, Controlled Drug Release.

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EVALUATION OF ANTI-HYPERLIPIDEMIC ACTIVITY OF ETHANOLIC ROOT EXTRACT OF *PSIDIUM GUAJAVA* IN WISTAR RATS

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ABSTRACT

Background: The aim of the present study was to investigate the effect of antihyperlipidemic activity of ethanolic extract of *Psidium guajava* (EEPG) and compares its efficacy with that of atorvastatin against atherogenic diet-induced hyperlipidemia model using rat as an experimental animal.

Material & methods: Wistar rats were divided into five groups. Animals were grouped as Control Group (received 0.9% *p.o.*), Induced Group received high fat diet, Low dose of EEPG Group (200 mg/kg, *p.o*), High dose of EEPG (400mg/kg *p.o*), receiving standard drug atorvastatin 10 mg/kg *i.p.*

Results : Increase the level of serum cholesterol, phospholipids, high-density lipoproteins, low-density lipoproteins, and triglycerides causing hyperlipidemia further leading to the development of atherosclerosis. On the other hand, oral administration of ethanolic extract of *P. guajava* at dose of 200 mg/kg & 400mg/kg for 15 days resulted in the prevention of above abnormalities.

Conclusion: The results suggest that EEPG could be beneficial in the treatment of atherosclerosis, characterized by atherogenic lipoprotein profile and abnormalities in lipid metabolism.

Keywords: *Psidium guajava*, Antihyperlipidemic, High-density lipoproteins, Atorvastatin.

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"Evaluation of Antiurolithiatic activity of ethanolic leaf extract of Anogeissus latifolia wall on sodium oxalate induced urolithiasis in Wistar rats"

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ABSTRACT

Background: In spite of advances in the present practice of medicine, the formation and growth of calculi continues to trouble mankind, as there is no satisfactory drug to treat kidney stones. In India, many indigenous drugs are in use for the treatment of urinary calculus disease.

Materials and Methods: Animals were grouped as Control Group (received 0.9% *p.o.*), NaOx Group (Sodium oxalate 70 mg/kg *,i.p.*), Low dose of ELAL Group (200 mg/kg, p.o), High dose of ELAL (400mg/kg), Cystone Group (500 mg/kg, *p.o.*), Sodium oxalate (70 mg/kg, *i.p*).

Result: The increased severity of microscopic calcium oxalate (CaOx) crystals deposition along with increased concentration in the kidney was seen after 7 days of NaOx (70 mg/kg, i.p.) pre-treatment. ELAL (200 and 400 mg/kg, *p.o.)* and standard marketed formulation Cystone (500 mg/kg, *p.o.*) caused a significant reversal of NaOx-induced changes in ion excretion and urinary CaOx concentration in 7 days treatment.

Conclusion: From the results, it was concluded that ELAL showed beneficial effect against urolithiasis by decreasing CaOx excretion and preventing crystal deposition in the kidney tubules.

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"EVALUATION OF ANTIDEPRESSANT ACTIVITY OF ETHANOLIC ROOT EXTRACT OF *CITRUS MAXIMA* IN WISTAR RATS"

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ABSTRACT

Background & Objective(s)

Citrus maxima is a traditional medicine used to treat astringent, constipation, hypnotic, inflammation and antiseptic. This study planned to assess antidepressant like activity of ethanolic extract from roots of *Citrus maxima* Merr. (Rutaceae).

Materials and Methods The extraction was carried out with ethanol with using Soxhlet apparatus. Acute toxicity study was performed in rats. Antidepressant activity was studied using modified forced swimming test (FST) and tail suspension test (TST). Two doses 100 and 300 mg/kg of ethanolic extract of root were selected for testing. Imipramine(25 mg/kg, *i.p.)* was used as the standard drugs.

Results Ethanolic extract of *Citrus maxima* roots significantly reduced immobility time in both TST and FST. Ethanolic extract of *Citrus maxima* in 300 mg/kg significantly decreased immobility time in force swimming and tail suspension under cold stress compared to group under cold stress receiving normal saline and *citrus maxima* root extract 100mg/kg.

Conclusion The results of this study suggest that the antidepressant-like effect of Citrus maxima seems to be mediated by an increase in norepinephrine level in synapses. It shows significant effect on serum corticosterone level.

Keywords: Antidepressant-like effect, *Citrus maxima*, Forced swimming test, Tail suspension test, cold stress.

APIIR/ABSTR/IC007: Computational Investigation on Newer Anti Diabetic Drugs-Target Interaction: A Comparative Study of Dapagliflozin, Tirzepatide, Teplizumab, & Semaglutide

Pratik Shee[1]*, Vachala S D[1], Keerthiraj C S[1], Likith U[1], Madineni Jhansi[1], Muhammed Nihal K[1], Abhijith K[1]

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Abstract:

Insilico screening methods helps to identify potential antidiabetic agents by analyzing the interactions between molecules and their targets. Existing oral treatments for type 2 diabetes primarily focus on a single key physiological pathway. These medications typically work by either stimulating or blocking specific receptors to boost insulin release, reduce glucose absorption, & decrease glucose production.However, as the disease progresses, single-agent therapies often become inadequate due to their limited effectiveness, necessitating combination therapy to achieve better glycemic control. In the present study, Totally four newer anti-diabetic drugs such as Dapagliflozin, Tirzepatide, Teplizumab and Semaglutide, were examined for their binding affinities towards the selected common targets, such as Insulin Receptors-(PDB IDS: 1BOM, 1BON, 5TQ1, 4F7V, 1PID, 4M4F), Sulfonylurea-(PDB IDS: 6DEN, 5H22, 7D1V, 7D22, 7D24), Dipeptidyl Peptidase-(PDB IDS: 2AJC, 1ORV, 3HGN, 1EPT, 3PSG). The receptor protein 3D structures were downloaded from the Protein Data Bank, and the molecular docking was performed using Auto Dock Vina tool, 2D interactions were predicted using PyRx and Discovery Studio. ADME properties were predicted using SWISS-ADME software. Among the drugs screened, Tirzepatide showed good binding efficiency with the insulin receptors. Dapagliflozin exhibited very good binding efficiency with the sulfonyl urea receptor. Also, this drug showed very good docking simulations with peroxisome proliferated activated gamma and dipeptidyl peptidase enzymes. Coulombic interactions and the creation of hydrogen bonds, Vander Waals interactions played significant role in the binding interactions. However *in vitro* and *in vivo* studies are the future concerns to confirm the present work.

Keywords: Insilico, antidiabetic agents, Dapagliflozin, Tirzepatide, Teplizumab , Semaglutide, Auto Dock Vina tool

APIIR/ABSTR/IC008: Revolutionizing Migraine Therapy: Orodispersible Tablets Crafted with Crystal Engineering and Computational Tools

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Abstract:

In the current study, the co-crystals of Flunarizine Dihydrochloride were synthesized using malonic acid as a coformer which is formulated as orodispersible tablets using Quality by Design (QbD) approach. The purpose of this investigation was to prepare co-crystals of poorly water soluble drug and to develop a suitable formulation for the treatment of Acute Migraine.