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## **Materio-Vigilance in Tertiary Care Hospital - Need for use of Artificial Intelligence**

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### **ABSTRACT**

The application of artificial intelligence (AI) in materio-vigilance - also known as medical device vigilance - has emerged as a promising strategy for improving the efficiency and safety of medical device monitoring. This theoretical investigates the use of artificial intelligence in materio-vigilance and its likely advantages.

Materio-vigilance is an important part of healthcare systems all over the world. Its goal is to keep medical devices safe and working well. With the rising intricacy and volume of clinical gadget information, there is a developing requirement for cutting edge innovations to help effective and exact checking and observation. Simulated intelligence, with its capacity to break down huge datasets, distinguish designs, and create bits of knowledge, holds extraordinary commitment in changing materio-vigilance rehearses.

The use of man-made intelligence in materio-vigilance offers a few likely advantages. First, artificial intelligence (AI) algorithms are capable of analyzing a variety of data sources, such as adverse event reports, electronic health records, and device registries, in order to discover previously unnoticed patterns and associations. This enables prompt interventions and enhanced patient safety by enabling the early detection of adverse events and potential safety issues. Furthermore, computer-based intelligence can aid the mechanization of unfavorable occasion detailing and sign identification processes, diminishing the weight on medical services experts and upgrading proficiency. Unstructured data, such as medical literature and social media posts, can be processed by AI-powered systems to identify emerging safety issues and continuously track device performance.

Additionally, AI has the potential to aid in the creation of predictive models that make proactive risk management and targeted interventions possible. AI algorithms are able to identify individuals who are at a higher risk of adverse events by analysing patient characteristics, device usage patterns, and clinical outcomes. This makes it possible for personalized healthcare strategies to be implemented. Additionally, AI-powered decision support systems can help healthcare professionals select, use, and monitor post-market devices in an informed manner.

**Keywords:** Artificial Intelligence (AI), Materio-vigilance, Medical Device Vigilance, Safety Monitoring, Effectiveness Monitoring, Adverse Event Detection.

## **Translating Research Investigation to Invention : Comparison and Recent Updates in Filing of Patent in India**

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### **ABSTRACT**

Since 1911, India has maintained a legal framework for the protection of inventions through the Patents and Designs Act. The current Patents Act of 1970 (Office of the Controller General of Patents, Design and Trademarks), enacted in 1972 under the Ministry of Commerce and Industry, Department of Promotion of Industry and Internal Trade, grants inventors an exclusive right for twenty years from the date of filing their application<sup>[1]</sup>. In case of applications under the Patent Cooperative Treaty (PCT), this period commences from the international filing date. Notably, patent holders must annually renew their patent by paying a prescribed fee and restoration requests can be submitted within eighteen months of the patent's expiration date<sup>[2]</sup>.

The adoption of electronic formats has significantly expedited the examination process and eliminated the cumbersome handling of extensive paper documentation<sup>[3]</sup>. The terms "Patent" and "e-Patent" are interchangeable, with the latter referring to patents filed electronically. The Indian Patent Office (IPO) has embraced the concept of electronic communication with stakeholders since the introduction of the e-filing service in 2007. According to the Patent (Amendment) Rules 2016, e-filing became mandatory on May 16, 2016, marking the discontinuation of manual patent filings<sup>[4]</sup>.

In summary, e-patents offer flexibility, expedited processing, a *patent* application can be filed at any time and place, increase number of patent application accuracy, and adherence to patent format standards. The transition to electronic filing reflects a modernized and efficient approach to patent management in India.

## Toxicity and Efficacy Study of Diabnash<sup>®</sup> Tablets

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### ABSTRACT

**Background and aims:** Diabetes mellitus is a cause of concern due to increase in the number of diabetic cases worldwide. In addition, harmful effects have been found to be associated with variety of synthetic drugs available for diabetes. Herbal medicines are gaining popularity as a safe alternative to these synthetic drugs. The herbal formulation called DIABNASH<sup>®</sup> tablets was prepared by combining extracts of different plants like *Gymnema sylvestre*, *Andrographis paniculata*, *Withania somnifera*, *Phyllanthus niruri* and others. The aim of the study was to evaluate the toxicity and determine the efficacy of the tablets in diabetic animals which will be useful for planning clinical trials in the future.

**Methods:** DIABNASH<sup>®</sup> was evaluated for acute oral toxicity in Sprague Dawley rats as per OECD 420 guideline (fixed dose procedure). The efficacy against diabetes and glucose tolerance test was performed using Streptozotocin-induced diabetic rats.

**Results:** The results of the study indicated that DIABNASH<sup>®</sup> was non-toxic up to 2000 mg/kg body weight. No external or internal gross pathological changes or signs of toxicity and mortality were observed. The data from the efficacy study concluded that there was hypoglycemic effect when DIABNASH<sup>®</sup> was administered at 280 and 560 mg/kg body weight. The glucose tolerance test showed tolerance at doses of 280 and 560 mg/kg body weight of DIABNASH<sup>®</sup> in a dose dependant manner.

**Conclusion:** From the study, it was concluded that DIABNASH<sup>®</sup> was non toxic up to 2000 mg/kg body weight. Hyperglycemia in Streptozotocin-induced diabetic rats was lowered and tolerance towards glucose levels was observed when administered with DIABNASH<sup>®</sup> at 280 and 560 mg/ kg body weight in a dose dependent manner.

**KEYWORDS:** Streptozotocin, toxicity, diabetic, glucose tolerance.

## Formulation and Evaluation of Herbal Mouthwash against Dental Caries

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### ABSTRACT

This study presents the formulation and evaluation of a herbal mouthwash containing extracts from Ginger, Tulsi, and Amla, aimed at combating dental caries-associated bacteria, *Staphylococcus aureus*, and *Streptococcus mutans*. Herbal ingredients were extracted and concentrated, and two formulations (F1 & F2) were prepared, varying extract concentrations. The mouthwash demonstrated physical attributes within acceptable ranges, with pH values of 6.8 and 6.6. Accelerated stability studies revealed consistent properties over three months at elevated temperatures. Antimicrobial activity against clinical strains displayed substantial inhibition, with F2 exhibiting greater efficacy than F1. The zone of inhibition for *S. mutans* was 23 mm (F2) and 24 mm (standard), while for *S. aureus*, it was 25 mm (F2) and 24 mm (standard). This herbal mouthwash shows promise in combating oral pathogens and warrants further exploration in dental care.

**KEYWORDS:** Mouthwash, Anti-microbial activity, Ginger, Tulsi, Amla and Honey.

## RESEARCH ARTICLE

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### ***In Vitro* Evaluation of Synergistic Anti-Arthritic Properties in Combined Extracts from *Boswellia serrata* and *Melia azedarach***

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#### ABSTRACT

Arthritis, an inflammatory joint disease-causing synovial membrane inflammation, pain, and restricted movement, affects approximately 2% of the Indian population. This study systematically explores the synergistic anti-arthritic potential of a combined extract from *Boswellia serrata* and *Melia azedarach*. Phytochemical analysis of the extract identified coumarin, alkaloids, flavonoids, polyphenols, and tannins through TLC studies. The anti-arthritic assay, employing the protein denaturation method, determined IC<sub>50</sub> values for the combined extract (BS&MA) and the reference standard (Diclofenac sodium) as 594.35 µg/ml and 87.12 µg/ml, respectively. Comparative analysis indicated moderate anti-arthritic activity for the combined extract in relation to diclofenac sodium. These preliminary findings warrant further in vitro investigations to substantiate and extend our understanding of the observed effects.

**KEY WORDS:** Arthritis, *Boswellia serrata*, *Melia azedarach*, Diclofenac sodium

## **Phytochemical Screening and Evaluation of Wound Healing Activity on Roots of Achyranthes Aspera Linn**

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### **ABSTRACT**

The present study, entitled "Phytochemical Screening and Evaluation of Wound Healing Activity on Roots of *Achyranthes aspera* Linn," encompasses the results of phytochemical studies and the antioxidant activity. Antioxidants are substances that delay the oxidation process, inhibiting the polymerization chain initiated by free radicals and other subsequent oxidizing reactions. Phenolic constituents, such as flavonoids, phenolic acids, and tannins, are well known for their higher activity. In order to quench the thirst for newer drugs with higher antioxidant potential, *Achyranthes aspera* was prepared using the herb's roots. The roots of *Achyranthes aspera* were extracted using water and ethanol. The extractive value was calculated, and the extract prepared was subjected to preliminary phytochemical studies, which showed the presence of carbohydrates, anthraquinones, amino acids, alkaloids, glycosides, and phytosterols. Further phytoconstituent flavonoid was identified by thin-layer chromatography. The in vitro antioxidant activity was carried out by two methods using ascorbic acid as a standard.

- DPPH radical-scavenging assay
- Superoxide anion scavenging assay

The *Achyranthes aspera* extract showed good inhibitory activity due to its antioxidant potential. It was observed that 10% ethanol and 20% ethanol exhibited significant wound healing activity. Among which, 10% w/w of 20% ethanol ointment exhibited highly significant activity as equivalent as povidone metronidazole ointment, which was clearly evidenced by its percentage closure, i.e., 98.32% on the 16th day. Significant wound healing activity and a dose-dependent response were exhibited by 10% ethanol and 20% ethanol. In comparison, the 20% ethanolic root extract of *Achyranthes aspera* is found to be more effective than the 10% ethanolic extract due to the presence of more phytochemical constituents in it.

**KEYWORDS:** *Achyranthes aspera*, antioxidant, wound healing