SCINTELLECT – An undergraduate research initiative
Annual report July 2019-June 2020 (AY 2019-20)

SCINTELLECT, the undergraduate research initiative of BNCP started formally in 2016 encourages undergraduate students to become involved in research projects under the mentorship of a faculty member. This is designed to provide an opportunity for students to evaluate the possibility of entering a higher education program in pharmaceutical sciences wherein the students are provided the opportunity of engaging in a full-time research experience in close collaboration with faculty members, postgraduate and PhD students. The outcomes after this experiential learning could be presentation of research project in seminars/conferences, research competitions like AVISHKAR and publications.

SCINTELLECT has gained popularity amongst the undergraduate students and there are 08 student groups (30 students) working on diverse projects and reviews with faculty mentors across all disciplines of pharmaceutical sciences. The outcome of this has resulted in 3 publications of high repute- Elsevier and Bentham.

Prepared by

Dr. Tabassum Khan
August 13, 2020

List of BNCP SCINTELLECT projects January-June 2020
Undergraduate Students research promotion activity

Name of faculty member	Title
Dr. Sujit Nair	**Review articles published by two UG students** **Manav Gandhi** New vistas in malignant mesothelioma: MicroRNA architecture and NRF2/MAPK signal transduction; **Manav Gandhi, Sujit Nair**; ,Life Sci; 2020 Jul 22;257:118123. doi: 10.1016/j.lfs.2020.118123. Online ahead of print. **Impact factor= 3.647** **Rishi Kothari** Current insights into interethnic variability in testicular cancers: Population pharmacogenetics, clinical trials, genetic basis of chemotherapy-induced toxicities and molecular signal transduction; Aman Vasistha , **Rishi Kothari** , Adarsh Mishra , Fernando De Andrés , Adrián LLerena , **Sujit Nair** Curr Top Med Chem; 2020 Jun 18 doi: 10.2174/1568026620666200618112205. **Impact factor= 3.218**
Dr. Padmini RaviKumar	Formulation development of drug loaded polymeric micelles and evaluation for antioxidant and anticancer activity Shambhavi Nabar- Final Year B. Pharm **Work not done** **Previous group outcome:** Pomegranate Peel: Extraction, Anthelmintic Activity and Formulation of Suspension, **Diveshkumar Choudhary*, Amrita Date, Padmini Ravikumar, Rashmi Mallya,** International Journal of Pharmaceutical Research | Jan - Jun 2020 | Supplementary Issue 1, 503-509
Dr. Arati Prabhu	Design synthesis and biological testing of Alzheimer's disease focused fragment library. Nikita Kamath- Final year B. Pharm **Design and synthesis of first round of Alzheimer's disease focused fragment library completed. (the library may be expanded in the future)**
Dr. Tabassum Khan	Formulation development and evaluation of anti-osteoarthritic and chondroprotective effects of *Spinacia oleracea* leaves in combination with *Acacia nilotica* pods (alcohol extracts).

	Nirali Chheda and Prachi Valekar- Final year B. Pharm **Formulation of pellets and granules completed** **Project lab work abandoned due to COVID lockdown from March 21 2020. Will be restarted once college reopens with a new group of students** Review compilation work-Ongoing Group 1- Jhanvi Jhaveri, Zarna Raichura, Jiya Patel Group 2- Priyanka Bafna, Mohnishh Balsara, Rishi Kothari
Ms. Madhavi Apte	1. Formulation development and evaluation of herbal cleansing agents. Pooja Goswami and Saloni Mehta - F.Y. B. Pharm **Work ongoing, to be continued after COVID lockdown opens.** 2. Formulation development and evaluation of herbal hair spray. Reedhi Gohil, Jiza Khan and Pooja Goswami- F.Y. B. Pharm **Work ongoing, to be continued after COVID lockdown opens.** 3. Formulation development and evaluation of herbal cough drops (lozenges). Umang Koyawala and Harshi Jhaveri- F.Y. B. Pharm **Work completed and presented at AVISHKAR 2019-20 Research Convention, University of Mumbai in category 6: Medicine & Pharmacy UG level.**
Dr. Pravin Kale	Review article- An update on limited caffeine consumption with antidepressants and animal handling studies. Ankita Koria, Urvashi Raithatha, Sakshi Chavan and Priyanka Dixit Ex-final year B. Pharm **Manuscript writing related to improvements is in process for the submission to a suitable journal.**
Dr. Mihir Khambete	Development of diagnostic device for asthma. Shubham Mewada, Prajakta Rao, Ishita Vettiyadan, Zahra Lokhandwala, Pankajkumar Paradia and Shambhavi Nabar- Final year B. Pharm **Preliminary literature search done.** **Further work abandoned due to COVID lockdown.**

Total SCINTELLECT projects ongoing= 12

Publications

Review > Life Sci. 2020 Jul 22;257:118123. doi: 10.1016/j.lfs.2020.118123. Online ahead of print.

New vistas in malignant mesothelioma: MicroRNA architecture and NRF2/MAPK signal transduction

Manav Gandhi [1], Sujit Nair [2]

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PMID: 32710945 DOI: 10.1016/j.lfs.2020.118123

Abstract

Malignant mesothelioma (MM) is a cancer of the mesothelial lining of the pleura, peritoneum, pericardium and testes. The most common form is asbestos-linked MM that is etiologically linked to repeated asbestos exposure with a long latency period, although non-asbestos MM has also been reported. Late diagnosis, poor survival rates, lack of diagnostic and prognostic markers act as major impediments in the clinical management of MM. Despite advances in immune checkpoint inhibition and CAR T-cell-based therapies, MM which is of different histologic subtypes remains challenging to treat. We review microRNAs (miRNAs) and the miRNA interactome implicated in MM which can be useful as circulating miRNA biomarkers for early diagnosis of MM and as biomarkers for prognostication in MM. Further, we underscore the relevance of the NRF2/MAPK signal transduction pathway that has been implicated in MM which may be useful as druggable targets or as biomarkers of predictive response. In addition, since MM is driven partly by inflammation, we elucidate chemopreventive phytochemicals that are beneficial in MM, either via crosstalk with the NRF2/MAPK pathway or via concerted anticancer mechanisms, and may be of benefit as adjuvants in chemotherapy. Taken together, a multifactorial approach comprising identification of miRNA target

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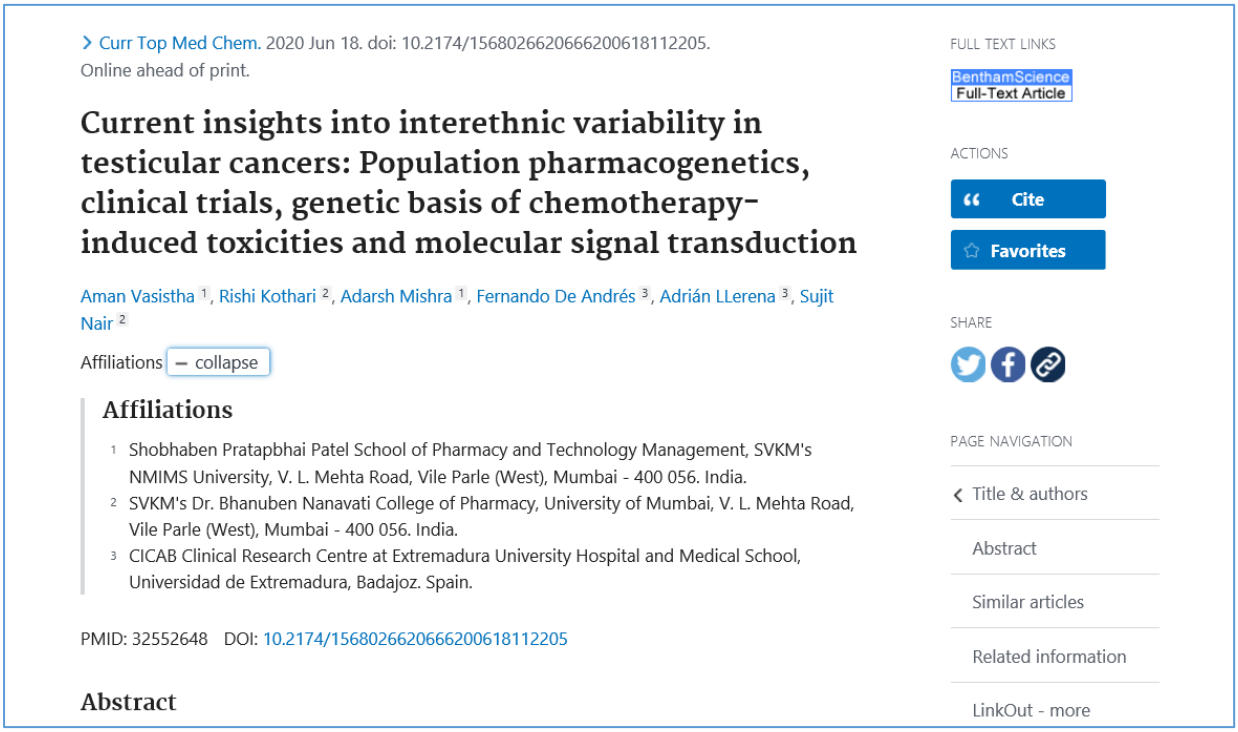

> Curr Top Med Chem. 2020 Jun 18. doi: 10.2174/1568026620666200618112205. Online ahead of print.

Current insights into interethnic variability in testicular cancers: Population pharmacogenetics, clinical trials, genetic basis of chemotherapy-induced toxicities and molecular signal transduction

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PMID: 32552648 DOI: 10.2174/1568026620666200618112205

Abstract

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Research Article

Pomegranate Peel: Extraction, Anthelmintic Activity and Formulation of Suspension

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ABSTRACT
Helminthiasis infestation affects over one billion people around the world every year, primarily children in developing countries. These are most commonly caused by ascariasis, trichuriasis, and hookworms. Drugs like albendazole and mebendazole have been used for decades for the prevention and treatment of the disease. However, the appearance of resistance to these drugs has made it essential to look into alternative treatment options. Pomegranate peel has traditionally been used in India as a home remedy for diarrhea. Its use as an antioxidant, anti-inflammatory, antimotility agent and antimicrobial has been reported. Hence the objective of this study was to evaluate the anthelmintic activity of the aqueous extract of pomegranate rind, Punica granatum (Family: Lythraceae), and to prepare a suspension of the same. The extract was standardized by evaluation of phenolic content, and was found to contain 177.6mg gallic acid equivalents per gram. The anthelmintic activity was evaluated using an earthworm model, for which the paralysis time and death time were measured. The extract was found to show activity comparable to a standard dose of albendazole suspension, at a concentration of 75g/ml. Suspensions of the extract were then formulated using a range of concentrations of various suspending agents, and were assessed on the basis of their redisperability and flow rate. A suspension made using 0.75% sodium alginate as the suspending agent showed the best properties.
The results show that Pomegranate peel does possess good anthelmintic activity.

Keywords: Punica granatum, anthelmintic, suspension, gallic acid

INTRODUCTION
Pomegranate has for many years found several applications in the prevention and treatment of human disease. It has been reported to exhibit antioxidant, anticancer, anti-inflammatory, antimicrobial, anti-hyperlipidemic and anti-carcinogenic properties. Its use has also been reported in the treatment of prostate cancer and atherosclerosis [1].
Pomegranate peel is rich in hydrolysable tannins. Tannins are secondary plant metabolites, which are polyphenolic in nature [2]. They are characterized by their astringent property, and their ability to precipitate proteins [3]. They are well known for possessing a wide range of pharmacological activities. Tannins obtained from several sources are known to have antioxidant, antimicrobial, anticancer and immunomodulatory effects in humans [4].
Pomegranate peel has traditionally been used in India, as a home remedy for diarrhea. Studies have reported that it possesses antidiarrheal activity, as a result of its ability to reduce intestinal motility [5]. The aim of this study was to prove that this antidiarrheal activity can also be attributed to its anthelmintic activity.

Infection due to helminths affects over 1 billion people around the world every year. Nematodes, including roundworms, Ascaridia galli, hookworms, Necator americanus, and whipworm Trichuris trichiura are the causative agents of the disease [6]. The disease is most common amongst children living in endemic regions. Soil-transmitted helminths are a major problem, particularly in developing countries, where poverty, poor hygiene and sanitation, and overcrowding increase the transmission of infection [7]. In extreme cases, it can lead to anemia, retarded growth, and delayed cognitive development in children [8]. Drugs like albendazole and mebendazole have been used for decades for the prevention and treatment of the disease. However, the appearance of resistance to these drugs has made it essential to look into alternative treatment options for these diseases [9].
People today are turning to natural products to use in the treatment of disease, in the hope that they will not produce the side effects commonly seen as a result of conventional medicines. In the case of anthelmintic drugs, such as albendazole, diarrhea is a common adverse effect. Tannin-containing natural anthelmintics are unlikely to have this effect, as a result of their anti-motility action. Research involving

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This is to Certify that **Mr. Koyawala Umang Hiren** of **Dr. Bhanuben Nanavati College of Pharmacy, Vile Parle** Partcipated and Presented a Research Project Titled **Herbal lozenges** in **Medicine and Pharmacy** Category and **UG** Level at the **Selection Round** of **14th Inter-Collegiate / Institute / Department Avishkar Research Convention: 2019-20** held at Dr. Bhanuben Nanavati College of Pharmacy, Vile Parle (W), Mumbai on **December 23, 2019** for **All Pharmacy Colleges of all Districts** zone.

DR. (MRS.) MINAKSHI GURAV
OSD
Avishkar Research Convention
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Date: December 23, 2019

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