VNIVERSITAT DE VALÈNCIA

Course Guide
43030 Fundamentals of pharmacology of inflammation

COURSE DATA

Data Subject	
Code	43030
Name	Fundamentals of pharmacology of inflammation
Cycle	Master's degree
ECTS Credits	3.0
Academic year	2024 - 2025

Study (s)

Degree	Center	Acad. year	Period
2138 - Master's Degree in Research in and Rational Use of Medicines	Faculty of Pharmacy and Food Sciences	1	Annual

Subject-matter

Degree	Subject-matter	Character
2138 - Master's Degree in Research in and Rational Use of Medicines	8 - Pharmacology of inflammation and immunity	Optional

Coordination

Name	Department
MONTESINOS MEZQUITA, MARIA CARMEN	135 - Pharmacology

SUMMARY

Subject belonging to the research itinerary of the “Master in Research and Rational Use of Medicines" that aims to address the most important aspects of the area of inflammation. Inflammatory processes are the basis of numerous pathologies affecting a large number of people. Anti-inflammatory drugs are one of the most widely used therapeutic groups, and therefore, it is essential to have an in-depth knowledge of this therapeutic group in order to promote their rational use, as well as new therapeutic strategies and the last lines of research in this field.

This course is conducted to study the molecular and physiological basis of the inflammatory process, as well as the newest findings in the field of research. In addition, it delves into the knowledge of new therapeutic strategies and mechanisms of action of anti-inflammatory drugs.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

The student must have prior knowledge of Pharmacology, Physiology, Pathophysiology and Biochemistry.

2138 - Master's Degree in Research in and Rational Use of Medicines

- Manejar adecuadamente las fuentes de información biomédica y poseer la habilidad de hacer una valoración crítica de las mismas integrando la información para aportar conocimientos a grupos asistenciales multidisciplinares
- Utilizar adecuadamente las herramientas informáticas, métodos estadísticos y de simulación de datos, aplicando los programas informáticos y la estadística a los problemas biomédicos
- Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.
- Students should demonstrate self-directed learning skills for continued academic growth.
- To acquire basic skills to develop laboratory work in biomedical research.
- Students should possess and understand foundational knowledge that enables original thinking and research in the field.
- Be able to integrate new technologies in their professional and/or research work.
- Know how to write and prepare presentations to present and defend them later.
- Ser capaces de analizar de forma crítica tanto su trabajo como el de su compañeros.
- Be able to access to information tools in other areas of knowledge and use them properly.
- Be able to apply the research experience acquired to professional practice both in private companies and in public organisations.
- Resolver de dilemas éticos derivados del empleo de medicamentos.
- Dominar la comunicación científica. Poseer habilidades sociales y comunicativas en la práctica asistencial.
- Capacidad de seleccionar y gestionar los recursos disponibles (instrumentales y humanos) para optimizar resultados en investigación.
- Dominar el método científico, el planteamiento de protocolos experimentales y la interpretación de resultados en la búsqueda, desarrollo y evaluación de nuevos fármacos.

- To know the molecular and cellular bases of the inflammatory process, as well as the effect and mechanism of action the main groups of anti-inflammatory drugs.

- Establish new possible targets for controlling the inflammatory process.

- Interpret, with a critical vision, the information obtained on the inflammatory process and new anti-inflammatory drugs.

- Evaluate the effect and mechanism of action of anti-inflammatory and immunosuppressive

- Plan the right organization to do teamwork and do it efficiently.

- Use scientific databases, abstracts, complete articles, etc. necessary to complete the their training on the use of advanced techniques

DESCRIPTION OF CONTENTS

1. General basis of the inflammatory process

2. Arachidonic acid metabolism: cyclooxygenases and lipoxygenases

3. Cytokines and anticytocins

4. Oxygenated and nitrogenous radical species

5. Nrf2

6. Adenosine

7. Biomarkers and stratified medicine

8. Main signaling and transcription pathways

9. Anti-inflammatory and anti-rheumatic drugs. New therapeutic targets

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	20,00	100
Group work	10,00	100
Development of group work	20,00	0
Study and independent work	10,00	0
Readings supplementary material	15,00	0
TOTAL	**75,00**	

TEACHING METHODOLOGY

During the activities, both theoretical and practical, the applications of the subject contents in relation to the Sustainable Development Goals (SDG) will be indicated. This is intended to provide knowledge, skills and motivation to understand and address these SDGs, while promoting reflection and criticism.

In this subject the basic methodology in the first sessions is the master class. To complement the master classes, seminars will be held to discuss and clarify doubts with students about the different topics studied throughout the program. During the development of the subject, the students will have to be preparing an individual work and / or in pairs on some the contents seen and that will be based on the analysis of recent publications in each one of the studied lines of investigation. In the last sessions, students have to present the work done, providing their own conclusions with a critical vision.

EVALUATION

It is an essential requirement in order to pass the subject attending both classroom lectures and seminars. Participation in the debates and discussions on the contents of the course, as well as the individual or in pairs' presentation will be especially appreciated.

REFERENCES

Basic

- - Lappano and Maggiolini, Nat. Rev. Drug Discovery 10:47-60 (2011)
  Rajagopal et al., Nat. Rev. Drug Discovery 9:373-386(2010)
  Germain et al. Pharmacol Rev. 58:685704, (2006)
  Medzhitov R., Nature 454, 7203, 428 (2008)
  Karin et al., Cell 124, 823 (2006)
  García-Arnandis et al. Arth.Res.Ther.,12:R65 (2010)
  Kawano & Nagata. Int. Immunol., doi: 10.1093/intimm/dxy055 (2018)
  Simmons et al. Pharmacol. Rev.;56:387 (2004)
  Kanaoka & Boyce. J. Immunol., 173: 1503 (2004)
  Ayala et al., Ox Med Cell Long, (2014)
  Nathan et al., Nat Immunol, (2013)
  Abusarah et al., Inflamm. Res., (2017)
  Lepetsos and Papavassiliou, BBA, (2016)
  Ferrándiz et al. Biochem Pharmacol,(2018)
  Oliviero et al. J Sci Food Agric, (2018)