

Medicinski fakultet u Rijeci

**IZVEDBENI NASTAVNI PLAN
2025/2026**

Za kolegij

Oxidative Stress and Antioxidants

Studij:	Medical Studies in English (R) (izborni) Sveučilišni integrirani prijediplomski i diplomski studij
Katedra:	Katedra za medicinsku kemiju, biokemiju i kliničku kemiju
Nositelj kolegija:	prof. dr. sc. Domitrović Robert, univ. mag. med. biochem.
Godina studija:	2
ECTS:	1.5
Stimulativni ECTS:	0 (0.00%)
Strani jezik:	Mogućnost izvođenja na stranom jeziku

Podaci o kolegiju:

Free radicals as extremely reactive chemical species represent a potential danger to all cells and contribute to the development of cardiovascular, neurodegenerative and inflammatory diseases, tumors, diabetes and other pathological conditions. However, at the same time, free radicals and other reactive oxygen and nitrogen species (ROS, "reactive oxygen species", RNS, "reactive nitrogen species"), by participating in phagocytosis and oxygenation, have a significant positive effect on metabolism. Within the framework of the course, the modes of action and effects of free radicals and ROS and RNS molecules in oxidative stress and the pathogenesis of various diseases will be discussed. In addition, students will be able to explain how the organism is protected from their harmful effects.

Popis obvezne ispitne literature:

1. Selected scientific papers.

Popis dopunske literature:

1. Internet databases.

Nastavni plan:

Predavanja popis (s naslovima i pojašnjenjem):

P1 What is oxidative stress?

Objasniti što je oksidacijski stres. Opisati slobodne radikale, reaktivne spojeve kisika i dušika, prooksidanse i antioksidanse. Istaknuti važnost pravilne prehrane. Protumačiti stvaranje reaktivnih spojeva kisika i dušika. Navesti način i mjesta stvaranja slobodnih radikala i drugih reaktivnih spojeva u metabolizmu.

P2 Significance of oxidative stress

Protumačiti fiziološku funkciju reaktivnih spojeva kisika i dušika. Objasniti ulogu slobodnih radikala i drugih reaktivnih spojeva u metabolizmu.

P3 Markers of oxidative stress

Navesti koji su biljezi oksidacijskog oštećenja DNA. Objasniti produkte nastale u reakciji slobodnih radikala s DNA i metode njihovog određivanja. Navesti koji su biljezi oksidacijskog oštećenja proteina. Objasniti produkte nastale u reakciji slobodnih radikala s proteinima i metode njihovog određivanja. Navesti koji su biljezi oksidacijskog oštećenja lipida. Objasniti produkte nastale u reakciji slobodnih radikala s lipidima i metode njihovog određivanja.

P4 Antioxidant types

Navesti enzimske antioksidanse. Objasniti ulogu superoksid dismutaze, glutation peroksidaze i katalaze u redukciji oksidacijskog oštećenja stanice. Navesti neenzimske antioksidanse. Objasniti ulogu vitamina C, vitamina E, karotenoida, glutationa, melatonina, liponske kiseline, flavonoida i dr. spojeva s antioksidacijskim učinkom u sprječavanju oksidacijskog oštećenja stanice.

P5 Oxidative stress and disease

Povezati reaktivni spojiv kisika i dušika, starenje i patološka stanja. Protumačiti ulogu slobodnih radikala i drugih reaktivnih spojeva u procesu starenja, razvoju dijabetesa, kardiovaskularnih bolesti, tumora i drugih kroničnih bolesti.

Seminari popis (s naslovima i pojašnjenjem):

S1 Presentations of seminar papers 1

Independent presentation of the seminar unit covered.

S2 Presentations of seminar papers 2

Independent presentation of the seminar unit covered.

S3 Presentations of seminar papers 3

Independent presentation of the seminar unit covered.

S4 Presentations of seminar papers 4

Obveze studenata:

Attendance and active participation of students in classes. The student must, in agreement with the course leader, prepare a seminar paper and make a PowerPoint presentation from a specific area related to oxidative stress. Students present their PowerPoint presentations in front of the leader and other colleagues. Every student is obliged to submit his seminar paper and PowerPoint presentation in electronic form.

Ispit (način polaganja ispita, opis pisanog/usmenog/praktičnog dijela ispita, način bodovanja, kriterij ocjenjivanja):

Student evaluation is carried out according to the valid Rulebook on studies of the University of Rijeka and according to the Rulebook on student evaluation at the Faculty of Medicine in Rijeka.

Ostale napomene (vezane uz kolegij) važne za studente:

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SATNICA IZVOĐENJA NASTAVE 2025/2026

Oxidative Stress and Antioxidants

Predavanja (mjesto i vrijeme / grupa)	Seminari (mjesto i vrijeme / grupa)
17.03.2026	
P1 What is oxidative stress?: <ul style="list-style-type: none">• ONLINE (17:00 - 17:45) ^[152]<ul style="list-style-type: none">◦ OS-A P2 Significance of oxidative stress: <ul style="list-style-type: none">• ONLINE (17:45 - 18:30) ^[152]<ul style="list-style-type: none">◦ OS-A P3 Markers of oxidative stress: <ul style="list-style-type: none">• ONLINE (18:30 - 19:15) ^[152]<ul style="list-style-type: none">◦ OS-A P4 Antioxidant types: <ul style="list-style-type: none">• ONLINE (19:15 - 20:00) ^[152]<ul style="list-style-type: none">◦ OS-A P5 Oxidative stress and disease: <ul style="list-style-type: none">• ONLINE (20:00 - 20:45) ^[152]<ul style="list-style-type: none">◦ OS-A	
prof. dr. sc. Domitrović Robert, univ. mag. med. biochem. ^[152]	
30.03.2026	
	S1 Presentations of seminar papers 1: <ul style="list-style-type: none">• ONLINE (18:00 - 21:45) ^[152]<ul style="list-style-type: none">◦ OS-A
prof. dr. sc. Domitrović Robert, univ. mag. med. biochem. ^[152]	
13.04.2026	
	S2 Presentations of seminar papers 2: <ul style="list-style-type: none">• ONLINE (17:00 - 20:45) ^[152]<ul style="list-style-type: none">◦ OS-A
prof. dr. sc. Domitrović Robert, univ. mag. med. biochem. ^[152]	
24.04.2026	
	S3 Presentations of seminar papers 3: <ul style="list-style-type: none">• ONLINE (14:00 - 17:45) ^[152]<ul style="list-style-type: none">◦ OS-A
prof. dr. sc. Domitrović Robert, univ. mag. med. biochem. ^[152]	

Popis predavanja, seminara i vježbi:

PREDAVANJA (TEMA)	Broj sati	Mjesto održavanja
P1 What is oxidative stress?	1	ONLINE
P2 Significance of oxidative stress	1	ONLINE
P3 Markers of oxidative stress	1	ONLINE
P4 Antioxidant types	1	ONLINE
P5 Oxidative stress and disease	1	ONLINE

SEMINARI (TEMA)	Broj sati	Mjesto održavanja
S1 Presentations of seminar papers 1	5	ONLINE
S2 Presentations of seminar papers 2	5	ONLINE
S3 Presentations of seminar papers 3	5	ONLINE
S4 Presentations of seminar papers 4	5	

ISPITNI TERMINI (završni ispit):
