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В издании, подготовленном по итогам XV международной научно-практической конференции (Гродно, 22–24 сентября 2020 г.), представлены статьи исследователей Беларуси, России, Польши, Литвы, Латвии, Турции, Украины, посвященные теоретическим и практическим аспектам сохранения биоразнообразия, влияния факторов окружающей среды на биологическую активность организмов, совершенствования методов экологического мониторинга. Рассматривается достаточно широкий спектр вопросов рационального использования водных и почвенных ресурсов, ресурсов атмосферы. Представлен опыт деятельности по экологическому образованию и просвещению в интересах устойчивого развития. Адресуется студентам, магистрантам, аспирантам и преподавателям средних и высших учебных заведений, научным сотрудникам.

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Table 1 – Cytotoxicity activities (mean ± std) of the gall extracts

Cynipid gall	Solvent	LC ₅₀ (µg/mL)
Asexual galls of <i>Aphelonyx cerricola</i>	Acetone	28,56±2,50 ^d
	Ethanol	12,23±1,94 ^{bc}
	Methanol	8,31±0,78 ^{abc}
	Water	54,83±9,06 ^e
Asexual galls of <i>Aphelonyx persica</i>	Acetone	51,91±3,20 ^e
	Ethanol	11,10±0,31 ^{bc}
	Methanol	5,94±0,32 ^{abc}
	Water	14,36±3,15 ^c
Sexual galls of <i>Synophrus politus</i>	Acetone	0,64±0,15 ^a
	Ethanol	4,41±0,58 ^{ab}
	Methanol	0,08±0,03 ^a
	Water	3,77±0,48 ^{ab}

LC₅₀ = the lethal concentration required to kill 50 % of the population; Data were given as the mean of the measurements±std. The letters after the mean values in each column refers to statistically different than the others (p < 0,05).

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CYTOTOXICITY ACTIVITIES OF OAK GALLS ON TURKEY OAK

In toxicity assessment of extracts by brine shrimp bioassay, if LC₅₀ value is lower than 1,000 µg/mL, the extract is considered toxic [3]. In our study, all of the gall extracts showed strong brine shrimp larvicidal activity. The brine shrimp bioassay results clearly demonstrate the toxic effects of the gall extracts, which could be due to any of the secondary metabolites of the galls.

Keywords: Cynipidae, cytotoxicity, *Aphelonyx*, *Synophrus*, gall, oak.

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PHENOLIC, FLAVONOID AND TANNIN AMOUNTS OF CYNIPS BASKALEI (CYNIPIDAE) GALL EXTRACTS

Цель исследования – измерить общее количество фенолов, флавоноидов и танинов в одном из галлов цинипидов, известных только в Турции. В ходе дальнейших исследований будут определены биоактивные компоненты других галлов цинипидов.

Ключевые слова: цинипиды, фенол, флавоноид, танин, галл, дуб¹⁶.

Oak gall wasps (Cynipidae, Cynipini) which known gall inducer on mostly oaks (*Quercus* spp.), is the largest group of cynipids with about 1000 species [1]. The genus *Cynips* belongs to the tribe of the Cynipini,

¹⁶ Аннотация и ключевые слова приведены на русском языке для расширения читательской аудитории.

is represented by nine species in the western Palaearctic region. All *Cynips* species are known to induce leaf gall on oaks [2; 3]. The galls that protect cynipid larvae and provide them with nutrients also contain high phenolic compounds [4]. It is known that oaks and their galls have been used in traditional medicine since ancient times [5].

In this study, we aimed to determine total phenolic, flavonoid and tannin amounts of *Cynips baskalei* Azmaz & Katılmış, 2020 gall extracts. Asexual galls of *C. baskalei* on sessile oak (*Quercus petraea* (Matt.) Liebl.) were collected from eastern Black Sea region, Turkey between 2017 and 2019. After adults were reared from the galls in the laboratory, the galls were dried in the shadow, broken into small parts. Finally, the galls extracts were prepared with acetone, ethanol, methanol and water using the previous method [6]. Total phenolic, flavonoid and tannin amounts were analysed respectively, using Folin-Ciocalteu method [7], the aluminium chloride colorimetric method [8] and the vanillin method [9]. The total phenolic amount as gallic acid equivalents (mgGAEs/g), the total flavonoid content as equivalents of quercetin (mgQEs/g), and the total tannin amount as equivalents of (+)-catechin (mgCEs/g) were expressed. Results were analyzed using the SPSS Statistical Package program. The results were presented as mean±std. The extracts were tested using Analysis of Variance and Tukey method were performed ($p < 0,05$).

In the present study, acetone and methanol gall extracts showed the highest phenolic content while ethanol and water gall extracts showed the lowest contents. The flavonoid contents ranged from 43,73 to 118,40 mgQE/g, and statistical differences among each group were found ($p < 0,05$). The total tannin content of the extracts varies from 67,83 to 97,55 mgCE/g. Compared to other solvents; the amount of tannin was mostly observed in acetone extract ($p < 0,05$).

Table 2 – Total phenolic, flavonoid and tannin contents (mean±std) of the extracts

Extracts of <i>C. baskalei</i> gall	Total Phenolic Content (mgGAEs/g)	Total Flavonoid Content (mgQEs/g)	Total Tannin Content (mgCEs/g)
Acetone	216,43±14,07 ^b	43,73±0,02 ^a	97,55±6,47 ^b
Ethanol	148,72±8,86 ^a	60,56±0,53 ^b	74,22±5,54 ^a
Methanol	187,48±19,59 ^b	71,83±1,68 ^c	67,83±4,63 ^a
Water	136,85±10,48 ^a	118,40±0,02 ^d	68,67±5,00 ^a

GAE = Gallic Acid Equivalents; QE = Quercetin Equivalents; CE = Catechin Equivalents; Data were given as the mean of the measurements±std, The letters after the mean values in each column refers to statistically different than the others ($p < 0,05$).

The gall extracts are powerful antioxidants due to their high content of phenolics, flavonoids and tannins. The gall extracts as therapeutic might be used for the prevention and treatment of some diseases in the next studies.

This study was supported as financial by The Scientific and Technological Research Council of Turkey (TÜBİTAK Project No: 117Z096).

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PHENOLIC, FLAVONOID AND TANNIN AMOUNTS OF *CYNIPS BASKALEI* (CYNIPIDAE) GALL EXTRACTS

The cynipid galls on oaks show large morphological and chemical variability. The aim of this study was to measure total phenolic, flavonoid, tannin amounts in one of the cynipid galls, are known from only Turkey. It would be determined bioactive components of other cynipid galls with further studies.

Keywords: cynipidae, phenolic, flavonoid, tannin, gall, oak.

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LEPTIN LEVEL IN POLYCYSTIC OVARIAN SYNDROME IRAQI PATIENT

Мы наблюдали, что уровень лептина в сыворотке был значительно выше у пациентов с синдромом поликистозных яичников (PCOS), страдающих ожирением, по сравнению со слабым PCOS и пациентами без PCOS. Концентрация лептина возрастает в доминирующей группе быстрее, чем в пораженной группе, где наблюдается уменьшение количества, которое достигает $5,81 \pm 2,41$.

Ключевые слова: лептин, синдром поликистозных яичников¹⁷.

Polycystic ovary syndrome is a common hormonal disorder among women of childbearing age. Women with syndrome may experience problems with menstrual irregularity, length of time, or an increase in the levels of male hormones (androgen) [1]. The ovaries may produce several groups of small fluid sacs (follicles) and fail to produce eggs regularly [2].

Leptin is an anorexigenic peptide hormone which secreted by adipocytes and circulates in the plasma as a free or protein-bound adipokine [3]. Leptin decreases appetite, increases energy expenditure, and reduces the production of neuropeptide Y from the hypothalamus. Neuropeptide Y increases food intake and after a long-term administration leads to obesity [4]. Leptin may also have a role in reproductive function, acting at many levels of the hypothalamic-pituitary-ovarian axis so the aim of the study was to assess the relationship between serum leptin levels and multiple ovarian syndrome [5].

During the 9-month study period of research, we obtained results by evaluating 95 women and knowing the leptin ratio available to them in polycystic ovarian syndrome iraqi patient with conducting other required examinations and undergoing a full examination session and measuring the concentration of parameters (vit D, TSH, leptin hormon, FSH, LH, lipid profile).

Table 1 – Composition of patients referred for examination

Parameters	PCOS (50)	Control group (45)	P. value
Age	26±4.52	28.31±5.8	0.182
FSH	5.82±2.81	4.93±1.8	0.021
TSH	3.84±1.7	3.95±1.9	0.253
LH	6.83±2.8	4.35±2.13	0.063
LEPTIN	5.81±2.41	10.83±5.41	0.0001
TC	205±60.9	211.98±61.22	0.74
HDL	59.25±23.59	56.99±19.86	0.30
LDL	114.63±35.98	115.30±45.54	0.58
TG	103.63±41.81	121.33±45.95	0.31

Table 2 – Correlation between leptin with FSH and LH

Parameter	FSH	LH
Leptin correlation coefficient	-0.032	0.25

¹⁷ Аннотация и ключевые слова приведены на русском языке для расширения читательской аудитории.

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