



PROCEEDINGS OF UZBEKISTAN-CHINA INTERNATIONAL SYMPOSIUM ON "CURRENT ISSUES IN THE CULTIVATION AND UTILIZATION OF MEDICINAL PLANTS"



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faol kompozitsiya nafaqat yuqori antioksidant faollikni, balki komponentlar aro sinergik ta'sir hisobiga erkin radikallarni neytrallashtirishda yuqori samaradorlikni namoyon etdi. Ushbu texnologik yondashuv qishloq xo'jaligi chiqindilarini yuqori qiymatli funksional mahsulotga aylantirish, oziq-ovqat xavfsizligini ta'minlash hamda aholi salomatligini mustahkamlovchi ekologik toza qo'shimchalar ishlab chiqarishda muhim ilmiy-texnik baza bo'lib xizmat qiladi.

Foydalanilgan adabiyotlar

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2. Kaur, M., et al. (2020). *Enzymatic hydrolysis of wheat bran for the extraction of phenolic compounds*.
3. Wang, W., et al. (2021). *Synergistic antioxidant effects of plant polyphenols in food matrix*. (Sinergizmkoefitsiyenti \$S > 1\$ vakomponentlarning o'zarota'sirinitushuntirish uchun asos).
4. Ghasemzadeh, A., et al. (2019). *Ultrasound-assisted extraction (UAE) of phenolic compounds*. (Ultratovush kavitatsiyasi orqali ekstraktsiya samaradorligini 2.25 barobarga oshirish bo'yicha texnologik dalillar).
5. Sanz-Pérez, A., et al. (2022). *Functional ingredients from wheat bran: Production, characterization and application*. (Kepakgidrolizatinioziq-ovqatvafarmatsevtikada "funktional ingredient" sifatida qo'llash amaliyoti).
6. Bonnely, S., et al. (2020). *Microencapsulation of antioxidants for controlled release in food products*. (Liofil quritish va mikroenkapsulyatsiya orqali barqarorlikni ta'minlash usullari).

BIOLOGICAL ACTIVITY OF ISATIN-BASED SCHIFF BASES

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Abstract. The presence of both the isatin nucleus and the azomethine ($-C=N-$) functional group, which greatly influence their pharmacological characteristics, isatin-based Schiff bases have become a significant family of bioactive chemicals. A large range of Schiff base derivatives with improved biological activity can be synthesized thanks to isatin's structural adaptability. These substances offer a wide range of therapeutic actions, including antibacterial, antifungal, antiviral, antitubercular, anticancer, anti-inflammatory, antioxidant, and anticonvulsant properties, according to recent research. The kind and location of substituents on the isatin ring and Schiff base moiety have a significant impact on the biological efficacy of isatin-based Schiff bases by influencing how they interact with biological targets. Furthermore, these substances'

capacity to create stable metal complexes frequently results in increased pharmacological activity and bioavailability. According to mechanistic studies, their biological effects might result from interactions with cellular signaling pathways, enzymes, and nucleic acids. This talk emphasizes the promise of isatin-derived Schiff bases as lead compounds in drug discovery by highlighting recent advancements in their synthesis, biological assessment, and structure–activity relationship investigations. An increasing amount of research suggests that isatin-based Schiff bases are excellent candidates for the creation of innovative therapeutic agents to address new issues in cancer, infectious diseases, and disorders linked to oxidative stress. In medicinal chemistry, isatin (indole-2,3-dione) is a special endogenous scaffold that is well-known for its wide range of pharmacological actions. Simultaneously, Schiff bases ($>C=N$ -linkage) have attracted significant interest because of their structural flexibility, simplicity of synthesis, and electrical characteristics that promote efficient drug-receptor interactions. In order to improve therapeutic efficacy and reduce off-target toxicity, this study investigates the strategic integration of these two pharmacophores to create a novel library of isatin-based Schiff bases. In this work, substituted isatins were condensed with different aromatic and heteroaromatic primary amines to create a number of new isatin derivatives. Using standard spectroscopic methods such as Fourier-transform infrared spectroscopy (FT-IR), proton and carbon nuclear magnetic resonance (1H -NMR and ^{13}C -NMR), and mass spectrometry (MS), the chemical structures of the produced compounds were carefully clarified.

Keywords: Isatin, Schiff bases, biological activity, antimicrobial agents, anticancer activity, antioxidant activity, medicinal chemistry, structure–activity relationship.

**BIOKIMYOVIY MELIORANTLARNI SHUDGORLASH BILAN BIR VAQTDA
TUPROQ YUZA QATLAMIGA SEPIB TUPROQQA ARALASHTIRIB
KETADIGAN TEXNIKA VA UNING ISHLOV BERISH TEXNOLOGIYASI.**

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Annotatsiya: Tadqiqotlarda qo'llanilgan preparatlar va biokimyoviy meliorantlarni kiritish qurilmasi, ishlov berish davomida sho'rlangan va meliorativ holati yomonlashgan sug'oriladigan tuproqlarning unumdorligini oshirish hamda suvdan foydalanish samaradorligini yaxshilash maqsadida biokimyoviy meliorantlardan foydalanildi. Xususan, Biosolvent, Pendimetalin, Trifluralin, Prometrin preparatlari va boshqa biokimyoviy meliorantlarni tuproqqa bir tekis taqsimlash uchun maxsus qurilma ishlab chiqildi.

Kalit so'zlar: Biokimyoviy meliorant, Pendimetalin, Trifluralin, Prometrin, Biosolvent, prepare, tuproq, shudgor, haydalma qatlam, fizik-kimyoviy xossalar.

Kirish. Buxoro viloyatining sug'oriladigan yerlari tuproqlarining sho'rlanish darajasi yuqoriligi va qishloq xo'jaligi ekinlarini yetishtirishda ushbu muammolarni o'rganib resurs tejamkor texnika va texnologiyalarni yaratish muhim vazifa hisoblanadi.