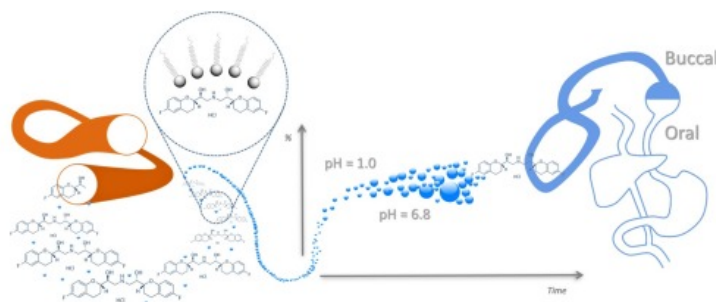




Student research group on early phase drug development



Acronym: EPhD2

Permanent members:

Emese Sipos, PhD, professor (Head of the group)

Zoltán - István Szabó, PhD, associate professor

Emőke Rédei, PhD, lecturer

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Molnár Tas

Nagy Szilárd

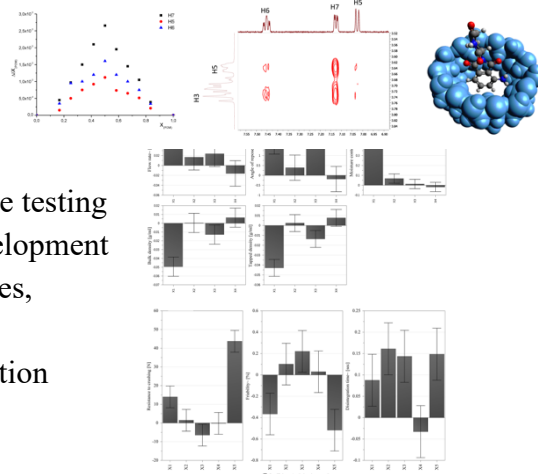
Vajda Tihamér





Research topics

- Improving bioavailability of poorly soluble drugs
- Nanofibers and cyclodextrin complexes
- Characterization of cyclodextrin complexation, including chiral separation method development
- Formulation and compatibility studies, stability and storage testing
- Quality by design in analytical and in pharmaceutical development
- *In vitro* dissolution testing – comparative dissolution studies, discriminative dissolution method development/validation
- Analytical method evaluation/development/transfer/validation



Research infrastructure (relevant items): computer-guided electrospinning unit; centrifugal spinning unit; HPLC-PDA, CE-UV, UV/VIS spectrophotometers; Erweka dissolution testers; DSC; FT-IR; viscosimeter; conductivity meter

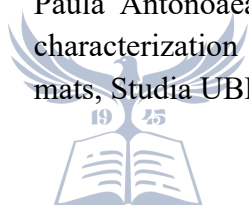
Relevant *in extenso* ISI articles on research items (as main authors: first author, corresponding author and last author; *students):

Lajos-Attila Papp, **Sarolta Krizbai**, Máté Dobó, Gabriel Hancu, **Zoltán-István Szabó***, Gergő Tóth: Determination of Chiral Impurity of Naproxen in Different Pharmaceutical Formulations Using Polysaccharide-Based Stationary Phases in Reversed-Phased Mode, *Molecules*, 2022, 27: 2986. FI 4.927

Beáta Benkő, István Sebe, **Zoltán-István Szabó***: Insulin for topical use in wound healing: opportunities and limitations, *Acta Pharmaceutica Hungarica*, 2022, 91: 3-19.

Enikő Bitay, Attila Gergely, **István Bálint***, Kolos Molnár, Ibolya Fülöp, Erzsébet Fogarasi, **Zoltán-István Szabó**: Preparation and characterization of lapatinib-loaded PVP nanofiber amorphous solid dispersion by electrospinning, *Express Polymer Letters*, 2021, 15: 1041-1051. FI 4.161

Émőke Rédei, **Izabella Ráduly***, **Zoltán-István Szabó**, Adriana Ciurba, Nicoleta Todoran, Paula Antonoaea, Robert-Alexandru Vlad, **Orsolya Péterfi***, **Emese Sipos**: Preparation and characterization of atorvastatin-loaded polyvinylpyrrolidone-based electrospun microfibrillar mats, *Studia UBB Chemia*, 2021, 66: 287-297. FI 0.447





Gergő Tóth, Erzsébet Fogarasi, Ágnes Bartalis-Fábián*, Mohammadhassan Foroughbakhshfasaei, Imre Boldizsár, András Darcsi, Szilvia Lohner, Gerhard K.E.Scriba, **Zoltán-István Szabó**: Liquid chromatographic method for the simultaneous determination of achiral and chiral impurities of dapoxetine in approved and counterfeit products, J Chrom A, 2020, 1626: 461388. FI 4.049

Emese Sipos, Tamás Csatári*, Adrienn Kazsoki, Attila Gergely, Enikő Bitay, **Zoltán-István Szabó**, Romána Zelkó: Preparation and Characterization of Fenofibrate-Loaded PVP Electrospun Microfibrous Sheets, Pharmaceutics, 2020, 12: 612. FI 4.421

Elek Ferenc*, Béla Kovács, Ferenc Boda, Foroughbakhshfasaei M, Éva Katalin Kelemen, Gergő Tóth, **Zoltán-István Szabó**: Simultaneous determination of chiral and achiral impurities of ivabradine on a cellulose tris (3-chloro-4-methylphenylcarbamate) chiral column using polar organic mode, J Pharm Biomed Anal, 2020, 177: 112851. FI 2.983

Emese Sipos, Nóra Kósa*, Adrienn Kazsoki, **Zoltán-István Szabó**, Romána Zelkó: Formulation and characterization of aceclofenac-loaded nanofiber based orally dissolving webs, Pharmaceutics 2020, 11: 417 FI 4.421

Zoltán-István Szabó, Réka Gál*, Zsolt Gáll, Szende Vancea, **Emőke Rédei**, Ibolya Fülöp, **Emese Sipos**, Gabriella Donáth-Nagy, Béla Noszál, Gergő Tóth: Cyclodextrin complexation improves aqueous solubility of the antiepileptic drug, rufinamide: solution and solid state characterization of compound-cyclodextrin binary systems. J Incl Phenom Macrocycl Chem, 88: 43-52. FI 1.095

Zoltán-István Szabó, Réka Gál*, Levente Szócs, Róbert Ludmerczki, Daniela-Lucia Muntean, Béla Noszál, Gergő Tóth: Validated capillary electrophoretic method for the enantiomeric quality control of R-praziquantel, Electrophoresis 2017, 38:1886-1894. FI 2.744

Emese Sipos, Andrea Ramona Oltean*, **Zoltán-István Szabó, Emőke Margit Rédei**, Gabriella Donáth-Nagy: Application of SeDeM expert systems in preformulation studies of pediatric ibuprofen ODT tablets, Acta Pharmaceutica 2017, 67:237-246. FI 1.288

Zoltán-István Szabó, Tímea Szabó*, **Rédei Emőke, Emese Sipos**: Validated HPLC method for determination of nebivolol in pharmaceutical dosage form and in vitro dissolution studies. Studia Universitatis Babes-Bolyai, Chemia 2014, 59 (4) FI 0.148

Emese Sipos, Noémi Szász*, Szende Vancea, Adriana Ciurba: Evaluation and selection of gel base for the formulation of dexpantenol products. Trop J Pharm Res 2014, 13:1987-1992. FI: 0,495 (2013)

Rita Ambrus, **Matild Gergely***, Alenka Zvonar, Piroška Szabó-Révész, **Emese Sipos**: The role of co-spray-drying procedure in the preformulation of intranasal propranolol hydrochloride, Acta Chim Slov 2014, 61:601-607. FI: 0,810 (2013)





Participation at scientific meetings:

Scientific Sessions of Hungarian Students (*Tudományos Diákköri Konferencia – TDK*) – prized presentations

Maczkós Szende*, Preparation and evaluation of dexketoprofen-containing, cyclodextrin-based electrospun scaffolds, 2022 – second prize, *Pharmacy Session*

Simion Orsolya*, Preparation and evaluation of electrospun chlorzoxazone-containing PVP-based nanofibers, 2022 – third prize, *Pharmacy Session*

Bálint István*, Preparation and evaluation of lapatinib-loaded nanofibers, 2022 – special prize, *Pharmacy Session*

Benkő Beáta Mária*, Chiral separation of apremilast by capillary electrophoresis. challenges and opportunities, 2020 – first prize, *Pharmacy Session*

Kósa Nóra*, Formulation and study of aceclofenac loaded nanofiber based orally dissolving webs, 2019 – first prize, *Pharmacy Session*

Ágnes Bartalis Fábíán*, Syntesis of fenofibric acid by alkaline hydrolysis of fenofibrate and possibilites of incorporating it in nanofibrous scaffolds, Scientific Session of Hungarian Students, 2019 – special prize, *Pharmacy Session*

Réka Gál*, Characterization of rufinamide-cyclodextrin complexes, Scientific Session of Hungarian Students, 2016 – special prize, *Pharmacy Session*

Réka Gál*, Enantiomeric separation of alkylamine antihistamines by liquid chromatography on an ovomucoid stationary phase, Scientific Session of Hungarian Students, 2015 – first prize, *Pharmacy Session*

International conference presentations

Zoltán-István Szabó, Botond Fazakas*, Eleonora Mircia, Emese Sipos: Aceclofenák tartalmú mikroszálas szövetdek előállítása és vizsgálata, Conferința de Tehnologie și Industrie Farmaceutică, 26-28 Septembrie 2019, Siófok, Ungaria.





19th INTERNATIONAL
SYMPOSIUM AND
SUMMER SCHOOL ON
BIOANALYSIS

July 8th-13th, 2019
Șuior, Romania



Elek Ferenc*, Béla Kovács, Francisc Boda, Foroughbakhshfasaei M, Éva Katalin Kelemen, Gergő Tóth, **Zoltán-István Szabó**: Simultaneous determination of chiral and achiral impurities of ivabradine on a cellulose tris (3-chloro-4-methylphenylcarbamate) chiral column using polar organic mode, 19th International Symposium and Summer School on Bioanalysis, 8-13 July 2019 – Șuior, Cluj, Romania.

Réka Gál*, **Zoltán – István Szabó**, Gergő Tóth, **Emőke Rédei**, Zsolt Gáll, Gabriella Donáth-Nagy, **Emese Sipos**, Béla Noszál, Gergő Tóth: Increasing the water solubility of a third generation antiepileptic drug by complexing with cyclodextrins, *Scientific Session of the Transylvanian Museum Society*, 20-23.04.2016, Tg. Mureș, Orvostudományi Értesítő, 2016, 89(Suppl. 2):16.

Zoltán-István Szabó, **Réka Gál***, Béla Noszál, Gergő Tóth: Evaluation of enantioselective cyclodextrin complexation of neutral compounds by capillary electrophoresis, *Scientific Session of the Transylvanian Museum Society*, 20-23.04.2016, Tg. Mureș, Orvostudományi Értesítő, 2016, 89(Suppl. 2):48.

Zoltán-István Szabó, **Réka Gál***, Béla Noszál, Gergő Tóth: Development and validation of a cyclodextrin-modified capillary electrophoresis method for the enantiomeric quality control of R-praziquantel, 16th CEEPUS Symposium and Summer School on Bioanalysis. 6-15.07.2016, Warsaw, Poland, Abstract Book, p.29



11th Central European Symposium
on Pharmaceutical Technology
SEPTEMBER 22nd - 24th 2016, BELGRADE

Emese Sipos, **Blanka Selyem***, Emőke Rédei, Péter Szabó, Romána Zelkó: Preformulation studies for the prediction of the fiber forming ability of poorly soluble drug containing polymer solutions, 11th Central European Symposium on Pharmaceutical Technology, 22-24 september

