

CARBOHYDRATE SCIENCE AND NMR CENTER PUBLICATIONS

(updated June 2020)

2020

420. **Glycosaminoglycans as Tools to Decipher the Platelet Tumor Cell Interaction: A Focus on P-Selectin.** Schwarz S, Gockel LM, Naggi A, Barash U, Gobec M, Bendas G, Schlesinger M. *Molecules*. 2020 Feb 26;25(5). doi:10.3390/molecules25051039.

419. **Pentosan polysulfate to control hepcidin expression in vitro and in vivo.** Asperti M, Denardo A, Gryzik M, Castagna A, Girelli D, Naggi A, Arosio P, Poli M. *Biochem Pharmacol*. 2020 Feb 20;175:113867. doi: 10.1016/j.bcp.2020.113867.

418. **In-depth structural characterization of pentosan polysulfate sodium complex drug using orthogonal analytical tools.** Alekseeva A, Raman R, Eisele G, Clark T, Fisher A, Lee SL, Jiang X, Torri G, Sasisekharan R, Bertini S. *Carbohydr Polym*. 2020 Apr 15;234:115913. doi: 10.1016/j.carbpol.2020.115913.

2019

417. **Heparanase as an Additional Tool for Detecting Structural Peculiarities of Heparin Oligosaccharides.** Alekseeva A, Urso E, Mazzini G, Naggi A. *Molecules*. 2019 Dec 2;24(23). doi: 10.3390/molecules24234403.

416. **Bacterial Nanocellulose and Its Surface Modification by Glycidyl Methacrylate and Ethylene Glycol Dimethacrylate. Incorporation of Vancomycin and Ciprofloxacin.** Vismara E, Bernardi A, Bongio C, Farè S, Pappalardo S, Serafini A, Pollegioni L, Rosini E, Torri G. *Nanomaterials (Basel)*. 2019 Nov 22;9(12). pii: E1668. doi: 10.3390/nano9121668

415. **Novel N-acetyl-Glycol-split heparin biotin-conjugates endowed with anti-heparanase activity.** Esposito E, Vlodaysky I, Barash U, Roscilli G, Milazzo FM, Giannini G, Naggi A. *Eur J Med Chem*. 2020 Jan 15;186:111831. doi:10.1016/j.ejmech.2019.111831

414. **1D and 2D-HSQC NMR: Two Methods to Distinguish and Characterize Heparin From Different Animal and Tissue Sources.** Mauri L, Marinozzi M, Phatak N, Karfunkle M, St Ange K, Guerrini M, Keire DA, Linhardt RJ. *Front Med (Lausanne)*. 2019 Jun 27;6:142. doi: 10.3389/fmed.2019.00142.

413. **In silico and in vitro analysis of genetic variants of the equine CYP3A94, CYP3A95 and CYP3A97 isoenzymes.** Vimercati S, Elli S, Jagannathan V, Pandey AV, Peduto N, Leeb T, Mevissen M. *Toxicol In Vitro*. 2019 Oct;60:116-124. doi: 10.1016/j.tiv.2019.05.011.
412. **A Glycosaminoglycan Extract from *Portunus pelagicus* Inhibits BACE1, the β Secretase Implicated in Alzheimer's Disease.** Mycroft-West CJ, Cooper LC, Devlin AJ, Procter P, Guimond SE, Guerrini M, Fernig DG, Lima MA, Yates EA, Skidmore MA. *Mar Drugs*. 2019 May 16;17(5). pii: E293. doi: 10.3390/md17050293
411. **SAX-HPLC and HSQC NMR Spectroscopy: Orthogonal Methods for Characterizing Heparin Batches Composition.** Spelta F, Liverani L, Peluso A, Marinozzi M, Urso E, Guerrini M, Naggi A. *Front Med (Lausanne)*. 2019 Apr 18;6:78. doi:10.3389/fmed.2019.00078. eCollection 2019.
410. **Introduction to the Molecules Special Edition Entitled '*Heparan Sulfate and Heparin: Challenges and Controversies*': Some Outstanding Questions in Heparan Sulfate and Heparin Research.** Yates EA, Gallagher JT, Guerrini M. *Molecules*. 2019 Apr 10;24(7). pii: E1399. doi: 10.3390/molecules24071399.
409. **Breakthroughs in Medicinal Chemistry: New Targets and Mechanisms, New Drugs, New Hopes**⁴. Mangoni AA, Guillou C, Vanden Eynde JJ, Hulme C, Jampilek J, Li W, Prokai-Tatrai K, Rautio J, Collina S, Tuccinardi T, Sousa ME, Sabatier JM, Galdiero S, Karaman R, Kokotos G, Torri G, Luque FJ, Vasconcelos MH, Hadjipavlou-Litina D, Siciliano C, Gütschow M, Ragno R, Gomes PAC, Agrofoglio LA, Muñoz-Torrero D. *Molecules*. 2018 Dec 31;24(1). doi: 10.3390/molecules24010130.
408. **β -Chitin samples with similar microfibril arrangement change mechanical properties varying the degree of acetylation.** Montroni D, Fermani S, Morellato K, Torri G, Naggi A, Cristofolini L, Falini G. *Carbohydr Polym*. 2019 Mar 1;207:26-33. doi: 10.1016/j.carbpol.2018.11.069.
- 2018**
407. **Structural Features of Heparan Sulfate from Multiple Osteochondromas and Chondrosarcomas.** Veraldi N, Parra A, Urso E, Cosentino C, Locatelli M, Corsini S, Pedrini E, Naggi A, Bisio A, Sangiorgi L. *Molecules*. 2018 Dec 11;23(12). doi:10.3390/molecules23123277.
406. **Structure and Function of Stony Coral Intraskelatal Polysaccharides.** Naggi A, Torri G, Iacomini M, Colombo Castelli G, Reggi M, Fermani S, Dubinsky Z, Goffredo S, Falini G. *ACS Omega*. 2018 Mar 31;3(3):2895-2901. doi: 10.1021/acsomega.7b02053.
405. **Structural and conformational studies of the heparan sulfate mimetic PI-88.** Elli S, Stancanelli E, Handley PN, Carroll A, Urso E, Guerrini M, Ferro V. *Glycobiology*. 2018 Oct 1;28(10):731-740. doi: 10.1093/glycob/cwy068.
404. **Indium/Gallium Maltolate Effects on Human Breast Carcinoma Cells: In Vitro Investigation on Cytotoxicity and Synergism with Mitoxantrone.** Merli D, Profumo A, Bloise N, Risi G, Momentè S, Cucca L, Visai L. *ACS Omega*. 2018 Apr 30;3(4):4631-4640. doi: 10.1021/acsomega.7b02026.

403. **Fine structural characterization of sulodexide.** Veraldi N, Guerrini M, Urso E, Risi G, Bertini S, Bensi D, Bisio A. *J Pharm Biomed Anal.* 2018 Jul 15;156:67-79. doi: 10.1016/j.jpba.2018.04.012.

402. **Recognition and Conformational Properties of an Alternative Antithrombin Binding Sequence Obtained by Chemoenzymatic Synthesis.** Stancanelli E, Elli S, Hsieh PH, Liu J, Guerrini M. *Chembiochem.* 2018 Mar 24. doi: 10.1002/cbic.201800095.

401. **The effect of increasing the sulfation level of chondroitin sulfate on anticoagulant specific activity and activation of the kinin system** Hogwood, J., Naggi, A., Torri, G., Page, C., Rigsby, P., Mulloy, B., Gray, E (2018) *PLoS ONE*, 13 (3), art. no. e0193482.

400. **Supersulfated low-molecular weight heparin synergizes with IGF1R/IR inhibitor to suppress synovial sarcoma growth and metastases** Cassinelli, G., Dal Bo, L., Favini, E., Cominetti, D., Pozzi, S., Tortoreto, M., De Cesare, M., Lecis, D., Scanziani, E., Minoli, L., Naggi, A., Vlodaysky, I., Zaffaroni, N., Lanzi, C. (2018) *Cancer Letters*, 415, pp. 187

399. **Synthesized heparan sulfate competitors attenuate *Pseudomonas aeruginosa* lung infection** Lorè, N.I., Veraldi, N., Riva, C., Sipione, B., Spagnuolo, L., De Fino, I., Melessike, M., Calzi, E., Bragonzi, A., Naggi, A., Cigana, C. (2018) *International Journal of Molecular Sciences*, 19 (1), art. no. 207,

398. **Looking forward to the future of heparin: New sources, developments and applications** Torri, G., Cassinelli, G. (2018) *Molecules*, 23 (2), art. no. Y,

397. **Remembering Professor Benito Casu (1927–2016).** Torri G. and Cassinelli G. (2018) *Molecules* 23, 292. doi:10.3390/Molecules23020292.

396. **Structure and Function of Stony Coral Intraskelatal Polysaccharides** Naggi, A., Torri, G., Iacomini, M., Colombo Castelli, G., Reggi, M., Fermani, S., Dubinsky, Z., Goffredo, S., Falini, G. (2018) *ACS Omega*, 3 (3), pp. 2895-2901.

395. **Characterization of therapeutic protein AvidinOX by an integrated analytical approach** Giannini, G., Alekseeva, A., Naggi, A., Salvini, L., Tei, L., De Santis, R (2018) *Analytical and Bioanalytical Chemistry*, 410 (2), pp. 553-564.

394. **Fundamentals and Applications of Cyclodextrins. in Cyclodextrin** Crini, G., Fourmentin, S., Fenyvesi, É., Torri, G., Fourmentin, M., & Morin-Crini, N. *Fundamentals, Reactivity and Analysis*, Editors: S Formentin, E. Licht-fouse, G. Crini. Springer Int. Publishing AG. (2018) chapter 1, 3-56.

2017

393. **Characterization of PF4-Heparin Complexes by Photon Correlation Spectroscopy and Zeta Potential** Bertini, S., Fareed, J., Madaschi, L., Risi, G., Torri, G., Naggi, A. (2017) *Clinical and Applied Thrombosis/Hemostasis*, 23 (7), pp. 725-734.

392. **Enhanced polyhydroxyalkanoate (PHA) production from the organic fraction of municipal solid waste by using mixed microbial culture** Colombo, B., Favini, F., Scaglia, B., Sciarria, T.P., D'Imporzano, G., Pognani, M., Alekseeva, A., Eisele, G., Cosentino, C., Adani, F. (2017) *Biotechnology for Biofuels*, 10 (1), art. no. 201
391. **Molecular Weights of Bovine and Porcine Heparin Samples: Comparison of Chromatographic Methods and Results of a Collaborative Survey** Bertini, S., Risi, G., Guerrini, M., Carrick, K., Szajek, A.Y., Mulloy, B. (2017) *Molecules (Basel, Switzerland)*, 22 (7)
390. **Combining NMR Spectroscopy and Chemometrics to Monitor Structural Features of Crude Heparin** Mauri, L., Marinozzi, M., Mazzini, G., Kolinski, R.E., Karfunkle, M., Keire, D.A., Guerrini, M. (2017) *Molecules*, 22 (7).
389. **Characterization of danaparoid complex extractive drug by an orthogonal analytical approach** Gardini, C., Urso, E., Guerrini, M., Van Herpen, R., De Wit, P., Naggi, A. (2017) *Molecules*, 22 (7), art. no. 1116
388. **Albumin and hyaluronic acid-coated superparamagnetic iron oxide nanoparticles loaded with paclitaxel for biomedical applications** Vismara, E., Bongio, C., Coletti, A., Edelman, R., Serafini, A., Mauri, M., Simonutti, R., Bertini, S., Urso, E., Assaraf, Y.G., Livney, Y.D. (2017) *Molecules*, 22 (7), art. no. 1030
387. **Structural characterization of the low-molecular-weight heparin dalteparin by combining different analytical strategies** Bisio, A., Urso, E., Guerrini, M., Wit, P.D., Torri, G., Naggi, A. (2017) *Molecules*, 22 (7), art. no. 1051
386. **Hemp decontamination of poly-metallic aqueous solutions** Bugnet, J., Morin-Crini, N., Cosentino, C., Chanut, G., Winterton, P., Crini, G. *Environmental Engineering and Management Journal* (2017), 16 (3), pp. 535-542.
385. **Characterization of PF4-Heparin Complexes by Photon Correlation Spectroscopy and Zeta Potential** S. Bertini, J. Fareed, L. Madaschi, G. Risi, G. Torri, A. Naggi, *Clinical and Applied Thrombosis/Hemostasis* (2017) January 1: 1076029616685430
384. **Qualification of HSQC methods for quantitative composition of heparin and low molecular weight heparins** Mauri, L., Boccardi, G., Torri, G., (...), Keire, D., Guerrini, M. 2017 *Journal of Pharmaceutical and Biomedical Analysis* 136, p. 92-105
383. **Investigating the relationship between temperature, conformation and calcium binding in heparin model oligosaccharides** Hughes, A. Meneghetti, M., Huang, T.-Y., Hung, S.-C., Elli, S., Guerrini, M., Rudd, T., Lima, M., Yates, E 2017 *Carbohydrate Research* 438, pp. 58-64
382. **Structural features of heparanase-inhibiting non-anticoagulant heparin derivative Roneparstat** Alekseeva, A., Mazzini, G., Giannini, G., Naggi, A. 2017 *Carbohydrate Polymers* 156, pp. 470-480

381. **Non-anticoagulant heparins are hepcidin antagonists for the treatment of anemia** Poli, M., Asperti, M., Ruzzenenti, P., Naggi, A., Arosio, P. 2017 *Molecules* 22(4),598

380. **Simultaneous removal of Cd, Co, Cu, Mn, Ni, and Zn from synthetic solutions on a hemp-based felt. II. Chemical modification** Loiacono, S., Crini, G., Martel, B., (...), Torri, G., Morin-Crini, N. 2017 *Journal of Applied Polymer Science* 134(32),45138

2016

379. **Investigating Glycol-Split- Heparin-Derived Inhibitors of Heparanase: A Study of Synthetic Trisaccharides.** Ni M., Elli S., Naggi A., Guerrini M., Torri G., Petitou M. *Molecules* 2016, 21(11), 1602

378. **Paramètres de l'eau et rejets industriels.** Morin-Crini N., Trunfio G., Winterton P., Torri G., Louvard N., Girardot S., Hutinet X. et Crini G. in *Eaux industrielles contaminées*. Editors MORIN-CRINI N., CRINI G., ROY L. - Presse Universitaires de Franche-Comté, 4, 2017

377. **Pollutant removal from industrial discharge water using individual and combined effects of adsorption and ion-exchange processes: Chemical abatement** Charles, J., Bradu, C., Morin-Crini, N., Sancey, B., Winterton, P., Torri, G., Badot, P.-M., Crini, G. 2016 *Journal of Saudi Chemical Society* 20.2 (2016): 185-194

376. **Pollutant removal from industrial discharge water using individual and combined effects of adsorption and ion-exchange processes: Chemical abatement** Charles, J., Bradu, C., Morin-Crini, N., Sancey, B., Winterton, P., Torri, G., Badot, P.-M., Crini, G. 2016 *Journal of Saudi Chemical Society* 20.2 (2016): 185-194

375. **Old and new applications of non-anticoagulant heparin** Cassinelli, G., Naggi, A. 2016 *International Journal of Cardiology* 212, pp. S14-S21 Heparin centenary—an ever-young life-saving drug. Torri, G., & Naggi, A. (2016). *International journal of cardiology*, 212, S1-S4.

374. **Atomic Details of the Interactions of Glycosaminoglycans with Amyloid- β Fibrils** Stewart, K.L. , Hughes, E., Yates, E.A., Akién, G.R., Huang, T.-Y., Lima, M.A., Rudd, T.R., Guerrini, M., Hung, S.-C., Radford, S.E., Middleton, D.A. 2016 *Journal of the American Chemical Society* 138(27), pp. 8328-8331

373. **Uncovering the Relationship between Sulphation Patterns and Conformation of Iduronic Acid in Heparan Sulphate** Hsieh, P.-H., Thieker, D.F., Guerrini, M., Woods, R.J., Liu, J. 2016 *Scientific Reports*

372. **Cross-linked cyclodextrin-based material for treatment of metals and organic substances present in industrial discharge waters** Euvrard, É., Morin-Crini, N., Druart, C., Bugnet, J., Martel, B., Cosentino, C., Moutarlier, V., Crini, G. 2016 *Beilstein Journal of Organic Chemistry*

371. **Investigating glycol-split-heparin-derived inhibitors of heparanase: A study of synthetic trisaccharides** Ni, M., Elli, S., Naggi, A., (...), Torri, G., Petitou, M. 2016 *Molecules* 21(11),1602

370. Nuclear Magnetic Resonance and Molecular Dynamics Simulation of the Interaction between Recognition Protein H7 of the Novel Influenza Virus H7N9 and Glycan Cell Surface Receptors Macchi, E., Rudd, T.R., Raman, R., (...), Guerrini, M., Elli, S. 2016 *Biochemistry* 55(48), pp. 6605-6616

369. The roots of modern oncology: from discovery of new antitumor anthracyclines to their clinical use. Cassinelli G *Tumori*. 2016 Apr 21:0. doi: 10.5301/tj.5000507. [Epub ahead of print]

368. Integrating computational and chemical biology tools in the discovery of antiangiogenic small molecule ligands of FGF2 derived from endogenous inhibitors. Foglieni C, Pagano K, Lessi M, Bugatti A, Moroni E, Pinessi D, Resovi A, Ribatti D, Bertini S, Ragona L, Bellina F, Rusnati M, Colombo G, Taraboletti G. *Sci Rep*. 2016 Mar 22;6:23432. doi: 10.1038/srep23432.

2015

367. Structural peculiarity and antithrombin binding region profile of mucosal bovine and porcine heparins. Naggi A, Gardini C, Pedrinola G, Mauri L, Urso E, Alekseeva A, Casu B, Cassinelli G, Guerrini M, Iacomini M, Baigorria V, Torri G. *J Pharm Biomed Anal*. 2016 Jan 25;118:52-63. doi: 10.1016/j.jpba.2015.10.001. Epub 2015 Oct 17.

366. Hydration of calcium sulphoaluminate clinker with additions of different calcium sulphate sources Allevi S, Marchi M, Scotti F, Bertini S, Cosentino C *Materials and Structures* 2016, 49(1-2), 453-466.

365. High Sulfation and a High Molecular Weight Are Important for Anti-hepcidin Activity of Heparin. Asperti M, Naggi A, Esposito E, Ruzzenenti P, Di Somma M, Gryzik M, Arosio P, Poli M. *Front Pharmacol*. 2016 Jan 11;6:316. doi: 10.3389/fphar.2015.00316. eCollection 2015.

364. Consequence of litter removal on pedogenesis: A case study in Bachs and Irchel (Switzerland). Scalenghe R, Minoja A P, Zimmermann S, Bertini S *Geoderma*, 2016271, 191-201.

363. New macrocyclic analogs of the natural histone deacetylase inhibitor FK228; design, synthesis and preliminary biological evaluation. Ni M, Esposito E, Raj VP, Muzi L, Zunino F, Zuco V, Cominetti D, Penco S, Dal Pozzo A. *Bioorg Med Chem*. 2015 Nov 1;23(21):6785-93. doi: 10.1016/j.bmc.2015.10.004. Epub 2015 Oct 9. Review.

362. Differentiation of generic enoxaparins marketed in the United States by employing NMR and multivariate analysis. Guerrini M, Rudd TR, Mauri L, Macchi E, Fareed J, Yates EA, Naggi A, Torri G. *Anal Chem*. 2015 Aug 18;87(16):8275-83. doi: 10.1021/acs.analchem.5b01366. Epub 2015 Aug 6.

361. Re-visiting the structure of heparin.

Casu B, Naggi A, Torri G. *Carbohydr. Res.* 2015 Feb 11;403:60-8. doi: 10.1016/j.carres.2014.06.023. Epub 2014 Jul 3. Review.

360. Endogenous origin of foams in lakes: a long-term analysis for Lake Maggiore (northern Italy)

Stefani F, Salerno F, Copetti D, Rabuffetti D, Guidetti L, Torri G, Naggi A, Iacomini M, Morabito G, Guzzella L *Hydrobiologia* 2015, 1-17.

359. Methods of characterization of sulfated polysaccharides. Naggi A and Torri G. In *Sulfated Polysaccharides*, Eds. Miguel Gama, Helena Nader and Hugo Rocha, Nova Science Publishers 2015, Cap 11 ISBN: 978-1-63483-002-7

358. Heparin derivatives for the targeting of multiple activities in the inflammatory response. Veraldi, N., Hughes, A.J., Rudd, T.R., Thomas, H.B., Edwards, S.W., Hadfield, L., Skidmore, M.A., Siligardi, G., Cosentino, C., Shute, J.K., Naggi, A., Yates, E.A. *Carbohydrate Polymers*, 117, 400–407, 2015

357. Principales applications des cyclodextrines.

Morin-Crini, N., Torri, G., Fourmentin F., Crini, G. In *Cyclodextrines. Histoire, propriétés, chimie & applications*. Ed: Morin-Crini, N., Fourmentin F., Crini, G. . Presse Universitaire Franche-Comté, 2015.

356. Determination of the molecular weight of low-molecular-weight heparins by using high-pressure size exclusion chromatography on line with a triple detector array and conventional methods Bisio, A., Mantegazza, A., Vecchiotti, D., Bensi D, Coppa A, Torri, G., Bertini, S. *Molecules*, 20, 5085-5098, 2015

355. Hydration of calcium sulphoaluminate cement studied by ²⁷Al MAS NMR spectroscopy. Allevi, S., Marchi, M., Scotti, F., Bertini, S., Cosentino C. *Materials and Structures*, 2015 (DOI 10.1617/s11527-014-0510-5).

2014

354. Susceptibility of enoxaparin reducing end amino sugars to periodate oxidation.

Alekseeva, A., Elli, S., Cosentino, C., Torri, G., Naggi, A. *Carbohydrate Research*, 400, 33-43, 2014

353. Oversulfated heparins with low anticoagulant activity are strong and fast inhibitors of hepcidin expression in vitro and in vivo.

Poli, M., Asperti, M., Ruzzenenti, P., Ruzzenenti, P. Mandelli, L. Campostrini, N. Martini, G. Di Somma, M. Maccarinelli, F. Girelli, D. Naggi, A. Arosio, P., *Biochemical Pharmacology* , 92, 467-475, 2014

352. Antithrombin-binding oligosaccharides: structural diversities in a unique function?

Guerrini, M., Mourier, P.A.J., Torri, G., Viskov, C. *Glycoconjugate Journal* , 31, 409-416, 2014

351. Re-visiting the structure of heparin Casu, B., Naggi, A., Torri, G. *Carbohydrate Research* DOI: 10.1016/j.carres.2014.06.023, 2014

350. **Insights into the human glycan receptor conformation of 1918 pandemic hemagglutinin-glycan complexes derived from nuclear magnetic resonance and molecular dynamics studies.** Elli, S., Macchi, E., Rudd, T.R., Elli, S. Raman, R. Sasaki, G. Viswanathan, K. Yates, E.A. Shriver, Z., Naggi, A., Torri, G., Sasisekharan, R., Guerrini, M.,
Biochemistry, 53, 4122-4135, 2014
349. **Alkylphenol and alkylphenol polyethoxylates in water and wastewater: A review of options for their elimination** Priac, A., Morin-Crini, N., Druart, C., Gavaille, S., Bradu, C., Lagarrigue, C.d, Torri, G., Winterton, P., Crini, G. Winterton, P., Crini, G.
Arabian Journal of Chemistry DOI: 10.1016/j.arabjc.2014.05.011
348. **Optimisation of an industrial wastewater decontamination plant: An environment-oriented approach** Charles, J., Crini, G., Bradu, C., Torri, G. Gavaille, S., Sancey, B., Morin-Crini, N., Trunfio, G., Badot, P.-M., Winterton, P., Lagarrigue, C.
Canadian Journal of Chemical Engineering, 92, 391-400, 2014
347. **A chlorhexidine-loaded biodegradable cellulosic device for periodontal pockets treatment.** Tabary, N., Chai, F., Blanchemain, N., Neut, C., Pauchet, L., Bertini, S., Delcourt- Debruyne, E., Hildebrand, H.F., Martel, B. Acta Biomaterialia 318-329, 2014.
346. **A heparin-like glycosaminoglycan from shrimp containing high levels of 3-O-sulfated D-glucosamine groups in an unusual trisaccharide sequence.** Chavante S.F, Brito A.S., Lima M., Yates E.A., Nader H., Guerrini M., Torri G., Bisio A. Carbohydrate Research 390, 59-66, 2014.
345. **Conformational changes of 1-4-glucofuranosyl residues of a sulfated CC linked hexasaccharide.** Coletti, A., Elli, S., Macchi, E., Galzerano, P., Zamani, L., Guerrini, M., Torri G., Vismara, E. Carbohydrate Research, 389, 134-140. 2014.
344. **Monosaccharide composition of glycans based on Q-HSQC NMR** Sasaki, G.L., Guerrini, M.R., Serrato, V., Filho, A.P.S., Carlotto, J., Simas-Tosin, F., Ricardo Cipriani, T., Iacomini, M., Torri, G., Gorin P.A.J. Carbohydrate Polymers 104, 34-41, 2014
343. **Advanced oxidation (UV-ozone) and cyclodextrin sorption: Effects of individual and combined action on the chemical abatement of organic pollutants in industrial effluents.** Charles, J., Crini, G., Morin-Crini, N., Badot, P.M., Trunfio, G., Sancey, B., de Carvalho, M., Bradu, C., Avramescu, S., Winterton, P., Gavaille, S., Torri G. Journal Taiwan Inst. Chemical Engineers 45, 603-608, 2014
342. **The role of VLA-4 binding for experimental melanoma metastasis and its inhibition by heparin.** Schlesinger, M., Roblek, M., Ortmann, K., Naggi, A., Torri, G., Borsig, L.R., Bendas. G. Thrombosis Research, 133, 5, 855-862, 2014
341. **Glycol-split non-anticoagulant heparins are inhibitors of hepcidin expression in vitro and in vivo.** Poli M. Asperti M. Naggi A. Campostrini N. Girelli D. Corbella M. Benzi M. Besson-Fournier C. Coppin H. Maccarinelli F. Finazzi D. Arosio P. Blood. 123(10):1564-73, 2014

2013

340. **Non-covalent synthesis of metal oxide nanoparticle–heparin hybrid systems: a new approach to bioactive nanoparticles.** Vismara, E., Valerio, A., Coletti, A., Torri, G., Bertini, S., Eisele, G., Gornati, R., Bernardini, G. *Int. J. Mol. Sci.* 14, 13463-13481, 2013
339. **Structural features of glycol-split low-molecular-weight heparins and their heparin lyase generated fragments.** Alekseeva A., Casu B., Cassinelli G., Guerrini M., Torri G., Naggi A., *Anal. Bioanal. Chem.*, in press (2013).
338. **Human ($\alpha 2 \rightarrow 6$) and avian ($\alpha 2 \rightarrow 3$) sialylated receptors of influenza A virus show distinct conformations and dynamics in solution.** Sasaki G.L., Elli S., Rudd T.R., Macchi E., Yates E.A., Naggi A., Shiver Z., Raman R., Sasisekharan R., Torri G., Guerrini M., *Biochemistry* ; 52, 7217-7230 (2013).
337. **Cyr61 is a target for heparin in reducing MV3 melanoma cell adhesion and migration via the integrin VLA-4.** Schmitz P., Gerber U., Schütze N., Jüngel E., Blaheta R., Naggi A., Torri G., Bendas G. *Thromb. Haemost.* ; 110, 1046-1054 (2013).
336. **Reversed-phase ion-pair ultra-high-performance-liquid chromatography-mass spectrometry for fingerprinting low-molecular weights heparins.** Langeslay D.J., Urso E., Gardini C., Naggi A., Torri G., Larive C.K. *J. Chromat. A* ; 1292, 201-211 (2013).
335. **Update in the recommendations on biosimilar low-molecular weight heparin from the Scientific Subcommittee on Control of Anticoagulation of the International Society of Thrombosis and Haemostasis.** Harenberg J., Walenga J., Torri G., Dahl O.E., Drouet L., Fareed J. *J. Thromb. Haemost.* ; 1421-1425 (2013).
334. **Unravelling structural information from complex mixtures utilizing correlation spectroscopy applied to HSQC spectra.** Rudd T.R., Macchi E., Muzi L., Ferro M., Gaudesi D., Torri G., Casu B., Guerrini M., Yates E.A. *Anal. Chem.* ; 85, 7487-7493 (2013).
333. **Heparin dodecasaccharide containing two antithrombin-binding pentasaccharides. Structural features and biological properties.** Viskov C., Elli S., Gaudesi D., Mourier P., Herman F., Boudiel C., Casu B., Torri G., Guerrini M. *J. Biol. Chem.* 2013;.....
332. **Profiling glycol-split heparins by high-performance liquid chromatography/mass spectrometry analysis of their heparinase-generated oligosaccharides.** Alekseeva A., Casu B., Torri G., Pierro S., Naggi A. *Anal. Chem.* ; 434, 112-122 (2013).
- 331 **Characterizing the microstructure of heparin and heparan sulfate using N-sulfoglucosamine 1H and 15N NMR chemical shift analysis.** Langeslay D.J., Beecher C.N., Naggi A., Guerrini M., Torri G. and Larive C.K. *Anal. Chem.* ; 85, 1247-1255 (2013).
330. **An unusual antithrombin-binding heparin octasaccharide with an additional 3-O-complexsulfated glucosamine in the active pentasaccharide sequence.** Guerrini

M., Elli S., Mourier P., Rudd T.R., Gaudesi D., Casu B., Boudier C., Torri G., Viskov C. *Biochem. J.* , 449, 343-351 (2013).

2012

329. **Anti-metastatic semi-synthetic sulphated maltotriose C-C linked dimers. Synthesis and characterization.** Vismara E., Coletti A., Valerio A., Naggi A., Urso E., Torri G. *Molecules* , 17, 9912-9930 (2012).

328. **The inhibition of the integrin VLA-4 in MV3 melanoma cell binding by non-anticoagulant heparin derivatives.** Schlesinger M., Schmitz P., Zeisig R., Naggi A., Casu B., Torri G., Bendas G. *Thromb. Res.* ; 129, 603-610 (2012).

327. **How to find a needle (or anything else) in a haystack: Two-Dimensional Correlation Spectroscopy-Filtering with iterative random sampling applied to pharmaceutical heparin.** Rudd T.R., Macchi E., Gardini C., Muzi L., Guerrini M., Yates E.A., Torri G. *Anal Chem.* ; 84, 6841-6847 (2012).

326. **A zinc complex of heparan sulfate destabilises lysozyme and alters its conformation.** Hughes R., Hussain R., Cosentino C., Guerrini M., Siligardi G., Yates EA, Rudd T.R., *Biochem. Biophys. Res. Comm.* ; 425, 794-799 (2012).

325. **Following protein-glycosaminoglycan polysaccharide interactions with differential scanning fluorimetry.** Uniewicz, K.A., Ori, A., Rudd, T.R., Guerrini, M., Wilkinson, M.C., Ferning, D.G., Yates, E.A., *Methods Mol. Biol.* ; 836, 171-182 (2012).

324. **Chitosan-graft-branched polyethylenimine copolymers: influence of degree of grafting on transfection behavior.** Pezzoli D., Olimpieri F., Malloggi C., Bertini S., Volonterio A., et al. *PLoS ONE* 7: e34711 (2012).

323. **Low-Molecular-Weight heparins: differential characterization/physical characterization.** Guerrini M., Bisio A., HEPARIN - A CENTURY OF PROGRESS. *Handbook of Experimental Pharmacology*, ; 207, Part 2, 127-157 (2012).

322. **Heparin-like heparan sulfate from rabbit cartilage.** Parra A, Veraldi N., Locatelli M., Fini M., Martini L., Torri G., Sangiorgi L., Bisio A., *Glycobiology* ; 22, 248-257 (2012).

321. **Following protein-glycosaminoglycan polysaccharide interactions with differential scanning fluorimetry.** Uniewicz KA, Ori A., Rudd TR., Guerrini M., Wilkinson MC., Fernig D.G., Yates EA, *Methods in Molecular Biology.* ; 836:171-182 (2012).

2011

320. **Inhibitory effects of glycosaminoglycans on basal and stimulated transforming growth factor-beta1 expression in mesangial cells: biochemical and structural considerations.** Bacilieri M., Naggi A., Ceol M., Schleicher ED., Toso E., Comoli M., Torri G., Moro S., Palumbo M., Gambaro G., *Glycobiology.*; 21, 1029-1037 (2011).

319. **Radical-based grafting of GMA on sutures of different nature.** Alberti A., Fuochi P., Guerra M., Macciantelli D., Torri G., Valerio A., Vismara E. *Organic & Biomolecular Chemistry.* ; 9, 3199-3204 (2011).

318. **Sulfated hexasaccharides attenuate metastasis by inhibition of P-selectin and heparanase.** Borsig L., Vlodavsky I., Ishai-Michaeli R., Torri G., Vismara E. *Neoplasia*. ; 13, 45-52 (2011).

317. **A robust method to quantify low molecular weight contaminants in heparin: detection of tris(2-n-butoxyethyl) phosphate.** Sasaki GL, Riter DS, Santana Filho AP, Guerrini M, Lima MA, Cosentino C, Souza LM, Cipriani TR, Rudd TR, Nader HB, Yates EA, Gorin PA, Torri G, Iacomini M. *Analyst* ;136, 2330-2338 (2011).

316. **SST0001, a chemically modified heparin, inhibits myeloma growth and angiogenesis via disruption of the heparanase/syndecan-1 axis.** Ritchie JP, Ramani VC, Ren Y, Naggi A, Torri G, Casu B, Penco S, Pisano C, Carminati P, Tortoreto M, Zunino F, Vlodavsky I, Sanderson RD, Yang Y. *Clin Cancer Res.* ;17,1382-93 (2011).

315. **High-sensitivity visualisation of contaminants in heparin samples by spectral filtering of 1H NMR spectra.** Rudd TR, Gaudesi D, Lima MA, Skidmore MA, Mulloy B, Torri G, Nader HB, Guerrini M, Yates EA. *Analyst* ;136,1390-1398 (2009).

314. **Construction and use of a library of bona fide heparins employing 1H NMR and multivariate analysis.** Rudd TR, Gaudesi D, Skidmore MA, Ferro M, Guerrini M, Mulloy B, Torri G, Yates EA. *Analyst* ;136,1380-1389 (2011).

313. **Glycosaminoglycans inhibit the adherence and the spreading of osteoclasts and their precursors: role in osteoclastogenesis and bone resorption.** Baud'huin M, Ruiz-Velasco C, Jegou G, Charrier C, Gasiunas N, Gallagher J, Maillason M, Naggi A, Padrines M, Redini F, Duplomb L, Heymann D. *Eur. J. Cell Biol.* ;90:49-57 (2011).

2010

312. **BioRuddcking of integrin-mediated human MV3 melanoma cell binding by commercial and modified heparins.** Schlesinger M, Naggi A, Torri G, Zeisig R, Alexander M, Schmitz P, Casu B, Bendas G. *Int. J. Clin. Pharmacol. Ther.*; 48,448 -450 (2010).

311. **Comparable stabilisation , structural changes and activities can be induced in FGF by a variety of HS and non-GAG analogues: implications for sequence-activity relationships.** Rudd T.R., Uniewicz K.A., Ori A., Skimore N.A., Gaudesi D., Xu R., Turnbull J.E., Guerrini M. Torri G., Siligardi G., Wilkinson M.C., Fernig D.G., Yates E.A., *Org. Biomol. Chem* ; 8, 5390-5397 (2010).

310. **Modeling the adsorption behavior of linear end-functionalized poly(ethylene glycol) on an ionic substrate by a coarse-grained Monte Carlo approach.** Elli S., Eusebio L., Gronchi P., Ganazzoli F., Goisis M. *Langmuir* ; 26, 15814- 15823 (2010).

309. **Comparable stabilisation, structural changes and activities can be induced in FGF by a variety of HS and non-GAG analogues: implications for sequence-activity relationships.** Rudd TR, Uniewicz KA, Ori A, Guimond SE, Skidmore MA, Gaudesi D, Xu R, Turnbull JE, Guerrini M, Torri G, Siligardi G, Wilkinson MC, Fernig DG, Yates EA. *Org Biomol Chem.* ; 8, 5390-5397 (2010).

308. **Heparin-derived heparan sulfate mimics to modulate heparan sulfate-protein interaction in inflammation and cancer.** Casu B, Naggi A, Torri G. *Matrix Biol.* ; 29, 442-452 (2010).

307. **The conformation and structure of GAGs: Recent progress and perspectives.** Rudd T.R., Skidmore M.A., Guerrini M., Hricovini M., Powell A.K., Siligardi G. and Yates E.A. *Curr. Op. Struct. Biol.* ; 20, 1-8 (2010).

306. **Characterization and binding activity of the chondroitin / dermatan sulphate chain from endocan, a soluble endothelial proteoglycan.** Sarrazin S., Lyon M., Deakin J.A., Guerrini M., Lassalle P., Delehedde M., Lortat-Jacob H. *Glycobiology* (2010);....

305. **Conformation rather than sequence determines polysaccharide activity with fibroblast growth factors-1 and -2.** Rudd TR., Uniewicz KA., Ori A., Guimond SE., Skidmore MA., Gaudesi D., Xu R., Stafford-Jones T., Holman J., Turnbull JE., Guerrini M., Torri G., Siligardi G., Wilkinson M., Fernig DG., Yates EA. *Org. Biomol. Chem.*

304. **Effects on molecular conformation and anticoagulant activities of 1,6-anhydrosugars at the reducing terminal of antithrombin-binding octasaccharides isolated from low-molecular-weight heparin enoxaparin.** Guerrini M., Elli S., Gaudesi D., Torri G., Casu B., Mourier P., Herman F., Boudier C., Lorenz M. and Viskov C. *J. Med. Chem.* ; 53, 8030-8040 (2010).

303. **Correspondence: Oversulfated chondroitin sulfate is the major contaminant in suspected heparin lots collected in February/March of 2008.** Guerrini M., Zhang, F., Shriver Z., Naggi A., Casu B., Linhardt R. J., Torri G., Sasisekharan R. *Nature Biotechnol.* ; 28, 207-211 (2010).

302. **Extraction and structural characterization of the polysaccharide fraction of *Launaea acanthodes* gum.** Piazza L., Bertini S., Milany J. *Carbohydr. Polymers* ; 79, 449-454 (2010).

301. **Low molecular weight heparin from Cu²⁺ and Fe²⁺ Fenton's type depolymerisation processes.** Vismara E., Pierini M., Mascellani G., Liverani L., Lima M., Guerrini M., Torri G. *Thrombosis Haemostasis*, ; 103, 613-622 (2010).

2009

300. **Orthogonal analytical approaches to detect potential contaminants in Heparin.** Guerrini M., Zhang Z., Shriver Z., Masuko S., Torri G., Naggi A., Langer R., Casu B., Linhardt R., Sasisekharan R. *Proc. Natl. Acad. Sci.*, 106:16956-16961 (2009).

299. **Surface functionalization of cotton cellulose with glycidyl methacrylate and its application for the adsorption of aromatic pollutants from wastewaters.** Vismara E., Melone L., Gastaldi G., Cosentino C., Torri G. *J. Hazardous Materials*. 170; 798-808 (2009).

298. **Electrochemical characterization of 6-iodomaltose, 6'-iodomaltose and 6-iodomaltotriose on silver cathode and their one-pot electrochemical dimerisation to**

new mixed O/C maltotetraose and maltohexaose mimics. Alberti A., Macciantelli D., Naggi A., Urso E., Torri G., Vismara E.. Chemistry DOI: 10.1002/chem.200 (2009).

297. **Multi-scale estimation of water soluble diffusivity in polysaccharide gels.** L. Piazza, J Gigli, S Bertini, G Eisele. Proceedings of Intern. Symp. on Food Rheology and Structure; ed. P. Fischer, M. Pollard and E J Windhab. ETH Zurich (2009) ...

296. **“Focusing” of low-molecular-mass heparins in polycationic poly-acrylamide matrices.** Zilberstein G.K. L., Shlar I., Fasoli E., Righetti P., Torri G., Bisio A.; Bukshpan S., Anal. Chem. 81: 6966-6971 (2009).

295. **Structural features of low molecular weight heparins affecting their affinity to antithrombin.** A. Bisio, D. Vecchiotti, L. Citterio, M. Guerrini, R. Raman, S. Bertini, G. Eisele, A. Naggi, R. Sasisekharan, G. Torri. Thromb. Haemost. 102: 865-873 (2009).

294. **The tainted heparin story: an update.** M. Guerrini, Z. Shriver, A. Bisio, A. Naggi, B. Casu, R. Sasisekharan, G. Torri. Thromb. Haemost.; 102: 907-911 (2009).

293. **Chitine et Chitosane. Préparation, propriétés et principales applications .** G. Crini, É. Guibal, M. Morcellet, G. Torri et P.-M. Badot. In Chitine et Chitosane. Du biopolymère à l’application, coordonné par Grégorio Crini, Pierre-Marie Badot et Éric Guibal, édité par les Presses Universitaires de Franche-Comté; Chap I, 19-54. ISBN 978-2-84867-249-6 (2009).

292. **Cations modulate polysaccharide structure to determine FGF-FGFR signaling: a comparison of signaling and inhibitory polysaccharide interactions with FGF-1 in solution.** Guimond SE, Rudd TR, Skidmore MA, Ori A, Gaudesi D, Cosentino C, Guerrini M, Edge R, Collison D, McInnes E, Torri G, Turnbull JE, Fernig DG, Yates EA. Biochemistry 48:4772-4779 (2009).

291. **Recommendations on biosimilar low-molecular-weight heparins.** Harenberg J, Kakkar A, Bergqvist D, Barrowcliffe T, Casu B, Fareed J, Mismetti P, Ofosu FA, Raake W, Samama M, Schulman S, on behalf of the Subcommittee on Control of Anticoagulation of the Scientific and Standardization Committee of the International Society on Thrombosis and Haemostasis. J. Thromb. Haemost. 7, 1222-1225 (2009).

290. **Glycosaminoglycan origin and structure revealed by multivariate analysis of NMR and CD spectra.** Rudd TR, Skidmore MA, Guimond SE, Cosentino C, Torri G, Fernig DG, Lauder RM, Guerrini M, Yates EA. Glycobiology; 19:52-67 (2009).

289. **Exploiting the cross-metathesis reaction in the synthesis of pseudo-oligosaccharides.** Ronchi P, Vignando S, Guglieri S, Polito L, Lay L. Org. Biomol. Chem.; 7: 2635–2644 (2009).

288. **Heparin and its derivatives - Present and future.** Harenberg J., Casu B. Thromb. Haemost.; 102, 801-802 (2009).

287. **Minimum FGF2 binding structural requirements of heparin and heparan sulfate oligosaccharides as determined by NMR spectroscopy.** Guglieri S, Hricovíni M, Raman R, Polito L, Torri G, Casu B, Sasisekharan R, Guerrini M. *Biochemistry* 47:13862-13869 (2008).
286. **A 3-O-methylated mannogalactan from *Pleurotus pulmonarius*: structure and antinociceptive effect.** Smiderle FR, Olsen LM, Carbonero ER, Marcon R, Baggio CH, Freitas CS, Santos AR, Torri G, Gorin PA, Iacomini M. *Phytochemistry* 69:2731-2736 (2008).
285. **Antithrombin-binding octasaccharides and role of extensions of the active pentasaccharide sequence in the specificity and strength of interaction. Evidence for very high affinity induced by an unusual glucuronic acid residue.** Guerrini M, Guglieri S, Casu B, Torri G, Mourier P, Boudier C, Viskov C. *J Biol Chem.* 26: 26662-26675 (2008).
284. **Oversulfated chondroitin sulfate is a contaminant in heparin associated with adverse clinical events.** Guerrini M, Beccati D, Shriver Z, Naggi A, Viswanathan K, Bisio A, Capila I, Lansing JC, Guglieri S, Fraser B, Al-Hakim A, Gunay NS, Zhang Z, Robinson L, Buhse L, Nasr M, Woodcock J, Langer R, Venkataraman G, Linhardt RJ, Casu B, Torri G, Sasisekharan R. *Nat Biotechnol.* 26: 669-675 (2008).
283. **Site-specific interactions of copper(II) ions with heparin revealed with complementary (SRCD, NMR, FTIR and EPR) spectroscopic techniques.** Rudd TR, Skidmore MA, Guimond SE, Guerrini M, Cosentino C, Edge R, Brown A, Clarke DT, Torri G, Turnbull JE, Nichols RJ, Fernig DG, Yates EA. *Carbohydr Res.* 343: 2184-2193 (2008).
282. **Adsorption of C.I. Basic Blue 9 on chitosan-based materials.** Crini G, Martel B, Torri G. *Int. J. Environment and Pollution,* 34: 451-465 (2008).
281. **Quantitative 2D NMR analysis of glycosaminoglycans. In: NMR spectroscopy in pharmaceutical analysis.** Torri G, Guerrini M, (Holzgrabe U, Wawer I, Diehl B. Eds). pp 407-427, Elsevier, Oxford. (2008)
280. **New nanostructured cellulose materials for the filtration of pollutants and for the adsorption of dyes.** Cosentino C, Gastaldi G, Melone L, Torri G, Vismara E. Editor(s): Laudon, Matthew; Romanowicz, Bart. NSTI Nanotech, Nanotechnology Conference and Trade Show, Technical Proceedings, Boston, MA, United States, June 1-5, 2008, 2, 110-113. CRC Press, Boca Raton, Fla CODEN: 69LIZ5 AN 2009:121102 (2008).
279. **Low molecular weight heparin-vectorized β -cyclodextrin nanostructures.** Bertini S.; Ferro M.; Pizzolato D.; Torri G.; Valerio A.; Vismara, E. Editor(s): Laudon, M; Romanowicz, B. NSTI Nanotech, Nanotechnology Conference and Trade Show, Technical Proceedings, Boston, MA, June 1-5, 2008; 2, 487-490. CRC Press, Boca Raton, Fla. (2008).
278. **Quantitative 2D NMR analysis of glycosaminoglycans.** G. Torri, M. Guerrini. Part III Chapter 04 12-5; 407 Integra, India, (2008).

277. Studying soil organic matter using ^{13}C CP-MAS NMR: the effect of soil chemical pre-treatments on spectra quality and representativity.

S. Salati, F. Adani, C. Cosentino, G. Torri. *Chemosphere*, 70, 2092-2098 (2008).

276. Unusual partially O-methylated alpha-galactan from mushrooms of the genus *Pleorotus*. E. R. Carbonero, A.H. Gracher, M.C. Rosa, G. Torri, G.L. Sasaki, P.A. Gorin, M. Iacomini. *Phytochemistry*, 69, 252-257 (2008).

275. Site-specific interactions of copper(II) ions with heparin revealed with complementary (SRCD, NMR, FTIR and EPR) spectroscopic techniques. T.R. Rudd, M.A. Skidmore, S.E. Guimond, M. Guerrini, C. Cosentino, R. Edge, A. Brown, D.T. Clarke, G. Torri, J.E. Turnbull, R.J. Nichols, D.G. Fernig, E.A. Yates. *Carbohydr Res.* 70 (11); 2092-8.(2008)

2007

274. The syndecan-1 heparan sulfate proteoglycan is a viable target for myeloma therapy. Y. Yang, V. MacLeod, Y. Day, Y. Khotskaya-Sample, Z. Shriver, G. Venkataraman, R. Sasisekharan, A. Naggi, G. Torri, B. Casu, I. Vlodavsky, L.J. Suva, J. Epstein, S. Yaccoby, J.D. Shaughnessy, B. Bartology, R. D. Sanderson. *Blood*, 110, 2041-2048 (2007).

273. Heparanase, heparin and the coagulation system in cancer progression. I. Vlodavsky, N. Ilan, Y. Nadir, B. Brenner, B.Z. Katz, A. Naggi, G. Torri, B. Casu, R. Sasisekharan. *Thromb. Res.* 120 112-120 (2007).

272. Inclusion complex characterization between progesterone and hydroxypropyl- β -cyclodextrin in aqueous solution by NMR study. G. Torri, S. Bertini, T. Giavana, M. Guerrini, N. Puppini, G. Zoppetti. *J. Incl. Phenom. Macrocyc. Chem.*, 57, 317-321 (2007).

271. Preparation of heat-resistant starch: Treatment of gels and DSC characterization. L.A. Wasserman, M. Signorelli, A. Schiraldi, V. Yuryev, G. Boggini, S. Bertini, D. Fessas. *J. Thermal Anal. Calorim.* 87, 153-157 (2007).

270. Influence of substitution pattern and cation binding on conformation and activity in heparin derivatives. T.R. Rudd, M.A. Skidmore, S.E. Guimond, R. Duchesne, M. Guerrini, G. Torri, A. Naggi, C. Cosentino, A. Brown, D. Clarke, J.E. Turnbull, D.G. Fernig, E.A. Yates. *Glycobiology*, 17 983-993 (2007).

269. Characterization of di- and monosulfated, unsaturated heparin disaccharides with terminal N-sulfated 1,6-anhydro- β -D -glucosamine or N-sulfated 1,6-anhydro- β -D-mannosamine residues. G. Mascellani, M. Guerrini, G. Torri, L. Liverani, F. Spelta, P. Bianchini. *Carbohydr. Res.*, 342, 835-842 (2007).

268. P-selectin- and heparanase-dependent antimetastatic activity of non-anticoagulant heparins. N. Holstetter, A. Naggi, G. Torri, R. Ishai-Michaeli, B. Casu, I. Vlodavsky, L. Borsig. *FASEB J.*, 21, 3562-3572 (2007).

267. O-sulfated bacterial polysaccharides with low anticoagulant activity inhibit metastasis. M. Borgerström, A. Warri, K. Hiilesvuo, R. Kanonen, L. Nissinen, M.

Philavisto, A. Mariamaki, I. Vlodavsky, A. Naggi, G. Torri, B. Casu, M. Salvimirta, K. Elenius. *Semin. Thromb. Hemost.* 33 (5),547-556 (2007).

266. **Structural modification induced in heparin by a Fenton-type depolymerization process.** E. Vismara, M. Pierini, S. Guglieri, L. Liverani, G. Mascellani, G. Torri. *Semin. Thromb. Hemost.* 33 (5),466-477 (2007).

265. **Heparanase: structure, biological functions, and inhibition by heparin-derived mimetics of heparan sulfate.** I. Vlodavsky, N. Ilan, A. Naggi, B. Casu. *Curr. Pharmac. Des.*, 13, 2057-2073 (2007).

264. **Interaction of heparins with fibroblast growth factors: conformational aspects.** M. Guerrini, H. Hricovini, G. Torri. *Curr. Pharmac. Des.*, 13, 5-56 (2007).

263. **Low molecular weight heparins: structural differentiation by bidimensional nuclear magnetic resonance spectroscopy.** M. Guerrini, M. Guglieri, A. Naggi, R. Sasisekharan, G. Torri. *Semin. Thromb. Haemost.*, 478-487 (2007).

262. **High-performance liquid chromatographic/mass spectrometric studies on the susceptibility of heparin species to cleavage by heparanase.** A. Bisio, A. Mantegazza, E. Urso, A. Naggi, G. Torri, C. Viskov, B. Casu. *Semin. Thromb. Hemost.*, 33 (5), 488-495 (2007).

261. **Non-anticoagulant heparins and inhibition of cancer.** Casu B, Vlodavsky I, Sanderson RD, *Pathophysiology Haemost. Thromb.* 2008, 36, 195-203 (2007).

2006

260. **Conformational transitions induced in heparin oligosaccharides by binding with antithrombin III.** M. Guerrini, S. Guglieri, D. Beccati, G. Torri, C. Viskov, P. Mourier. *Biochem. J.*, 15, 191-198 (2006).

259. **Pullulans produced by strains of *Cryphonectria parasitica*. Nuclear magnetic resonance evidence.** F. Delben, A. Forabosco, M. Guerrini, G. Liut, G. Torri. *Carbohydr. Polymers*, 63, 545-554 (2006).

258. **Interactions of low-molecular weight semi-synthetic sulfated heparins with human leukocyte elastase and human cathepsin.** G. C. Sissi, L. Lucatello, A. Naggi, G. Torri, M. Palumbo. *Biochem. Pharmacol.*, 71, 287-293 (2006).

257. **Structure of two glucans and a galactomannan from the lichen *Umbilicaria mammulata*.** E.R. Carbonero, F.R. Smiderle, A.H.P. Gracher, G.G. Mellinger, G. Torri, T. Ahti, P.A.J. Gorin, M. Iacomini. *Carbohydr. Polymers*, 63, 13-18 (2006).

256. **The impact of heparanase and heparin on cancer metastasis and angiogenesis.** I. Vlodavsky, G. Abboud-Jarrous, M. Elkin, A. Naggi, B. Casu, R. Sasisekharan, N. Ilan. *Pathophysiol. Haemost. Thromb.* 35(1-2);116-27; (2006).

2005

255. **Structure and active domains of heparin. B. Casu In: Chemistry and biology of heparin and heparan sulfate.** (H. G. Garg, R. J. Linhardt, C.A. Hales, ed.s), Elsevier, Amsterdam 2005, 1-19 (2005)..

254. **Glycol-splitting ad a device for modulating inhibition of growth factors and heparanase by heparin and heparin derivatives.** A. Naggi. In: Chemistry and biology of heparin and heparan sulfate. (H.G. Garg, R.J. Linhardt, C.A. Hales, ed.s), Elsevier , Amsterdam 2005, 461-476 (2005)..

253. **Dynamic properties of biologically active synthetic heparin-like hexasaccharides.** J. Angulo, M. Hricovini, M. Gairi, M. Guerrini, J.L. de Paz, R. Ojeda, M. Martin-Lomas, P.M. Nieto. *Glycobiology*, 15, 1008-1015 (2005).

252. **Preparation, characterization and sorption properties of cross-linked starch-based exchangers.** F. Delval, G. Crini, S. Bertini, C. Filiatre, G. Torri. *Carbohydr. Polymers*, 60, 67-75 (2005).

251. **Electron beam irradiated textile cellulose fibers. ERS studies and derivatization with glycidyl metacrylate (GMA).** A. Alberti, S. Bertini, G. Gastaldi, N. Iannaccone, D. Macciantelli, G. Torri, E. Vismara. *Eur. Polymer J.*, 41, 1787-1797 (2005).

250. **Modulation of the heparanase-inhibiting activity of heparin through selective desulfation, graded N-acetylation, and glycol-splitting.** A. Naggi, B. Casu, M. Perez, G. Torri, G. Cassinelli, S. Penco, C. Pisano, G. Giannini, R. Ishai-Michaeli, I. Vlodavsky. *J. Biol. Chem.*, 280, 12103-12113 (2005).

249. **The impact of heparanase on cancer progression.** Vlodavsky, I., Ilan, N., Abboud-Jarrous, G., Nadir, Y., Brenner, B., Naggi, A., Pisano, C., Casu, B. *Haematol. Reports* 1; 61-62 (2005).

248. **Heparanase accelerates wound angiogenesis and wound healing in mouse and rat models.** E. Zcharia, R. Zilka, A. Yaar, O. Yakoby-Zeevi, A. Zetser, S. Metzger, S. Sarid, A. Naggi, B. Casu, N. Ilan, I. Vlodavsky, R. Abramovitch. *FASEB J.* 19, 211-221 (2005).

247. **Identification and characterization of heparin/heparan sulfate binding domains of the endoglycosidase heparanase.** F. Levy-Adam, M. Guerrini, D. Beccati, I. Vlodavsky, N. Ilan. *J. Biol. Chem.* 280, 20457-20466 (2005).

246. **Generation of "neoheparin" from "E. Coli" K5 capsular polysaccharide.** U. Lindahl, J.-P. Li, M. Kusche-Gullberg, M. Salmivirta, S. Alaranta, T. Veromaa, J. Emeis, I. Roberts, C. Trevor, P. Oreste, G. Zoppetti, A. Naggi, G. Torri, B. Casu. *J. Med. Chem.*, 48, 349-352 (2005).

245. **Synthesis and characterisation of hexa- and tetrasaccharide-like mimics from acetobromomaltotriose and acetobromomaltose, and of C-disaccharide-like mimics from acetobromoglucose, obtained by electrochemical reduction on silver.** M. Guerrini, S. Guglieri, R. Santarsiero, E. Vismara. *Tetrahedron: Asymmetry*, 16, 243-253 (2005).

244. **Molecular weight determination of heparin and dermatan sulfate by size exclusion chromatography with a triple detector array.** S. Bertini, A. Bisio, G. Torri, D. Bensi, M. Terbojevich. *Biomacromolecules*, 6, 168-173, (2005).

243. **Undersulfated, low-molecular weight glycol-split heparin as an antiangiogenic VEGF antagonist.** C. Pisano, C. Aulicino, L. Vesci, B. Casu, A. Naggi, G. Torri, D. Ribatti, M. Rusnati, M. Presta. *Glycobiology*, 15, 1C-6C, (2005).

242. **Complex glycosaminoglycans: profiling substitution patterns by two dimensional NMR spectroscopy.** M. Guerrini, A. Naggi, S. Guglieri, R. Santarsiero, G. Torri. *Anal. Biochem.*, 337, 35-47, (2005).

2004

241. **Undersulfated and glycol-split heparins endowed with antiangiogenic activity.** B. Casu, M. Guerrini, A. Guglieri, A. Naggi, M. Perez, G. Torri, G. Cassinelli, D. Ribatti, P. Carminati, G. Giannini, S. Penco, C. Pisano, M. Belleri, M. Rusnati, M. Presta. *J. Med. Chem.*, 47, 838-848 (2004).

240. **Structural and conformational aspects of the anticoagulant and antitrombotic activity of heparin and dermatansulfate.** B. Casu, M. Guerrini, G. Torri. *Current Pharmac.Design*, 10, 939-949, (2004).

239. **Controlled g-ray irradiation of heparin generates oligosaccharides enriched in highly sulfated sequences.** A. Bisio, S. Guglieri, M. Frigerio, G. Torri, E. Vismara, U. Cornelli, D. Bensi, S. Gonella, L. De Ambrosi. *Carbohydr. Polymers* 455, 101-112, (2004).

238. **Structure of a heteroglucan of gum exudate of the palm *Schelea phalerata* (uricuri).** F.F. Simas, P.A. Gorin, M. Guerrini, A. Naggi, G.L. Sasaki, C.L. Delgobo, M. Iacomini. *Phytochemistry*, 65, 2347-2355 (2004).

237. **Nuovi filati di lino reticolato con acido citrico mediante trattamento termico o irraggiamento con microonde.** G. Castaldi, E. Vismara, M. Comoli, G. Torri, C. Leonelli, P. Veronesi, G. Rondi, S. Maini. *AIM Magazine*, 3 (2004).

2003

236. **Left pyo-pneumothorax: a rare complication of colon carcinoma.** A.R. Oskorouchi, S. Licheni, G. Pisano, E. Erdas, B. Casu, F. Crobu, M. Pomata. *Tumori*. 89, 135-137 (2003).

235. **Involvement of heparanase in tumor progression and normal differentiation.** I. Vlodyavsky, E. Zcharia, O. Goldshmidt, R. Eshel, B. Z. Katz, S. Minucci, O. Kovalchuk, S. Penco, C. Pisano, A. Naggi, B. Casu. *Pathophysiol. Haemost. Thromb.* 33(S1), 59-61 (2003).

234. **Modulation of antithrombin-protease interactions by semisynthetic low-molecular-weight heparins with different sulfation patterns.** C. Sissi , A. Naggi , G. Torri , M. Palumbo. *Semin. Thromb. Hemost.* 6, 661-670 (2003).

233. **1976-1983, a critical period in the history of heparin: the discovery of the antithrombin binding site.** M. Petitou, B. Casu, U. Lindahl. *Biochimie*, 85, 83-89 (2003).

232. **Structural characterization of a galactomannan from the cyanolichen *Leptogium azureum*.** E.R. Carboneroa, C.A. Tischera, C. Cosentino, P.A.J. Gorin, M. Iacomini, *Carbohydr. Polymers* 53, 469-473 (2003).

231. **Antiangiogenic heparin-derived heparan sulfate mimics.** B. Casu, A. Naggi. *Pure Appl. Chem.* 75, 155-164, (2003).

2002

230. **NMR spectroscopy of sulfated oligo- and polysaccharides.** M. Hricovini, P. Nieto, G. Torri. In: *NMR spectroscopy of glycoconjugates.* (J. Jiménez-Barbero, T. Peters, Eds) 2002, pp. 189-229.

229. **Textiles thermosetting by microwaves.** M. C. D'Arrigo, B. Focher, G.C. Pellacani, C. Cosentino, G. Torri. *Macromolecular Symposia*, 180, 223-239 (2002).

228. **A novel computational approach to integrate NMR spectroscopy and capillary electrophoresis for structure assignment of heparin oligosaccharides.** M. Guerrini, R. Raman, G. Venkataraman, G. Torri, R. Sasisekharan, B. Casu. *Glycobiology*. 12, 713-719 (2002).

227. **Active conformations of glycosaminoglycans. NMR determination of the conformation of heparin sequences complexed with antithrombin and fibroblast growth factors in solution.** M. Hricovini, M. Guerrini, A. Bisio, G. Torri, A. Naggi, B. Casu. *Seminars Thromb. Hemost.* 28, 325-334 (2002).

226. **Low-molecular weight heparin and dermatansulfate end-group labeled with tyramine and fluoresceine. Biochemical and biological characterization of the fluorescent labeled heparin derivative.** J. Harenberg, B. Casu, M. Guerrini, R. Malsch, A. Naggi, L. Piazzolo, G. Torri, *Seminars Thromb. Hemost.* 28, 343-354 (2002).

225. **Effects of calcium ions on the interactions between antithrombin III and factor Xa mediated by variously-sulfated, semi-synthetic low-molecular-weight heparins.** C. Sissi, L. Lucatello, A. Naggi, G. Torri, M. Palumbo. *Seminars Thromb. Hemos.* 28, 355-3602 (2002).

224. **Chemical derivatization as a strategy to study structure-activity relationships of glycosaminoglycans.** B. Casu, A. Naggi, G. Torri, *Seminars Thromb. Hemost.* 28, 335-342 (2002).

223. **Grafting of cyclodextrins onto polypropylene nonwoven fabrics for the manufacture of reactive filters. Study of the sorption properties.** B. Martel, P. Thuaut, S. Bertini, G. Crini, M. Bacquet, G. Torri, M. Morcellet. *J. Appl. Polymer Sci.*, 85, 1771-1778 (2002).

222. **Inhibition of B16-B16 melanoma lung colonies by semisynthetic sulfaminoheparosansulfates from E. Coli K5 polysaccharide.** A Poggi, C. Rossi, N. Casella, C. Bruno, L. Sturiale, C. Dossi, A. Naggi, *Seminars Thromb. Hemost.* 28, 383-392 (2002).

221. **Short heparin sequences spaced by glycol-split uronate residues are antagonists of fibroblast growth factor 2 and angiogenesis inhibitors.** B. Casu, M. Guerrini, A. Naggi, M. Perez, G. Torri, D. Ribatti, P. Carminati, G. Giannini, S. Penco, C. Pisano, M. Belleri, M. Rusnati, M. Presta. *Biochemistry*, 41 (33), 10519-10528 (2002) *Biochemistry* 41, 10519-10528 (2002).

220. **The sorption of several types of dye on crosslinked polysaccharide derivatives.** F., Delval, G. Crini, N. Morin, J. Vebrel, S. Bertini, G. Torri. *Dyes and Pigments*. 53, 79-92 (2002).

219. **Human milk oligosaccharides: an enzymatic protection step simplifies the synthesis of 3'- and 6'-O-sialyllactose and their analogues.** A. Rencurosi, L. Poletti, M. Guerrini, G. Russo and L. Lay. *Carbohydr. Res.* 337. 473-483 (2002).

218. **Minimal heparin/heparan sulfate sequences for binding to fibroblast growth factor-1.** M. Guerrini, T. Agulles, A. Bisio, M. Hricovini, L. Lay, A. Naggi, L. Poletti, L. Sturiale, G. Torri, B. Casu. *Biochem. Biophys. Res. Comm.* 292, 222-230 (2002).

217. **Pustulan and branched β -galactofuranan from the phytopatogenic fungus *Guignardia citricarpa*, excreted from media containing glucose and sucrose.** G.L. Sasaki, J.C. Ferreira, C. Glienke-Blanco, G. Torri, F. De Toni, P.A.J. Gorin, M. Iacomini. *Carbohydr. Polym.* 48, 385-389 (2002).

216. **Biosynthetic oligosaccharide libraries for identification of protein-binding heparan sulfate motifs.** P. Jemth, J. Kreuger, M. Kusche-Gullberg, L. Sturiale, G. Giménez-Gallego, U. Lindahl. *J. Biol. Chem.* 277, 30567-30573 (2002).

2001

215. **Structure and biological interactions of heparin and heparan sulfate.** B. Casu, U. Lindahl. *Adv. Carbohydr. Chem. Biochem.* 57, 159-206 (2001).

214. **Isolation of lactose-free oligosaccharide fractions from non-human milks.** D. Beccati, B. Casu, A. Naggi, G. Torri. *Glycoconj. J.*, 18, 25 (2001).

213. **Characterization of nimesulide/ β -cyclodextrin composite obtained by solid state activation.** L. Magarotto, S. Bertini, C. Cosentino, G. Torri. *J. Metastab. Nanocryst. Materials*, 10, 643-648 (2001).

212. **A rational approach to heparin-related fragments. Synthesis of differently sulfated tetrasaccharides as potential ligands towards fibroblast growth factors.** L. Poletti, M. Fleischer, C. Vogel, M. Guerrini, G. Torri, L. Lay. *Eur. J. Org. Chem.* 14, 2727-2734 (2001).

211. **Generation of anti-factor Xa active, 3-O-sulfated glucosamine-rich sequences by controlled desulfation of oversulfated heparins.** A. Naggi, B. De Cristofano, A. Bisio, G. Torri, B. Casu. *Carbohydr. Res.* 336, 283-290 (2001).
210. **Preserving the original heparin structure of a novel low molecular weight heparin by g-irradiation.** A. Bisio, L. De Ambrosi, S. Gonella, M. Guerrini, S. Guglieri, G. Maggia, G. Torri. *Arzneim. Forsch./Drug Res.* 51, 806-813 (2001).
209. **Combined quantitative ¹H and ¹³C-NMR spectroscopy for characterization of heparin preparations.** M. Guerrini, A. Bisio, G. Torri. *Seminars Thromb. Hemost.* 27, 473-482 (2001).
208. **Effects of sulfation upon antithrombin III-thrombin/factor Xa interactions in semi-synthetic low molecular weight heparins.** C. Sissi, A. Naggi, G. Torri, M. Palumbo. *Seminars Thromb. Hemost.* 27, 483-487 (2001).
207. **Towards a biotechnological heparin through combined chemical and enzymic modification of the E. coli K5 polysaccharide.** A. Naggi, B. De Cristofano, A. Bisio, G. Torri, B. Casu, P. Oreste, G. Zoppetti, U. Lindahl. *Seminars Thromb. Hemost.* 27, 437-444 (2001).
206. **MALDI mass spectrometry as a tool for characterizing glycosaminoglycan oligosaccharides and their interaction with proteins.** L. Sturiale, A. Naggi, G. Torri. *Semin. Thromb. Hemost.* 27, 465-472 (2001).
205. **Conformation of heparin pentasaccharide bound to antithrombin III.** M. Hricovini, M. Guerrini, A. Bisio, G. Torri, M. Petitou, B. Casu. *Biochemical J.*, 359II, 265-272 (2001).
204. **Sequence analysis of heparan sulfate epitopes with graded affinities for FGF-1 and FGF-2.** J. Kreuger, M. Salmivirta, L. Sturiale, G. Giménez-Gallego, U. Lindahl. *J. Biol. Chem.*, 276, 30774-30772, (2001).
203. **Structural differences between non-wood plant celluloses: evidence from solid state NMR, vibrational spectroscopy and X-ray diffractometry.** B. Focher, M. T. Palma, M. Canetti, G. Torri, C. Cosentino, G. Gastaldi. *Ind. Crops Products*, 13:193-208 (2001).
202. **Synthesis of sulfated glycosaminoglycans.** B. Casu, A. Naggi, G. Torri. *Glycoscience – Chemistry and Chemical Biology*, vol. 3 (J. Thiem, ed.) Springer Verlag, pp. 1895-1904 (2001).

2000

201. **Caratterizzazione di carboni mediante ¹³C-NMR allo stato solido.** M. Perini, G. Migliavacca, S. Bertini, E. Parodi, C. Vecchi. *Rivista Comb.*, 54, 170-184 (2000).
200. **Grafting of cyclodextrins onto polypropilene nonwoven fabrics for the manufacture of reactive filters. Characterization.** B. Martel, P. Le Thuaut, G. Crini, M. Morcellet, A. Naggi, U. Maschke, S. Bertini, C. Vecchi, X. Coqueret, G. Torri. *J. Appl. Polym. Sci.*, 78: 2166-2173 (2000).

199. **Influence of glucose on production and N-sulfation of heparan sulfate in cultured adipocyte cells.** N. Parthasarathy, L.F. Gotow, J.D. Bottoms, J.C. Obunike, A. Naggi, B. Casu, I.J. Goldberg, W.D. Wagner. *Mol. Cell. Biochem.*, 213:1-9 (2000).

198. **Acetobromomaltose, a new source of carbohydrate radicals. EPR characterisation of maltosyl and 2-deoxymaltos-2-yl radicals and syntheses of tetrasaccharide-like mimics, maltal, 3-?-maltosyl propionitrile, 1,5-anhydromaltitol and 2-deoxymaltopyranoside.** A. Alberti, S. Bertini, M. Comoli, M. Guerrini, A. Mele, E. Vismara. *Tetrahedron*, 56, 6291-6297 (2000).

197. **Effects of substitution patterns on ¹H, ¹³C NMR, chemical shifts and ¹JCH coupling constants spectral parameters in heparin derivatives.** E.A. Yates, F. Santini, B. De Cristofano, N. Payre, C. Cosentino, M. Guerrini, A Naggi, G Torri, M. Hricovini. *Carbohydr. Res.*, 329, 239-247 (2000).

196. **Preparation of water-soluble/insoluble derivatives of hyaluronic acid by cross-linking with epichloridrin in aqueous NaOH/NH₄OH solution.** I. Simkovich, M. Hricovini, L. Soltés, R. Mendichi, C. Cosentino. *Carbohydr. Polym.* 41, 9-14 (2000).

195. **A novel heparan sulphate with high degree of N-sulfation and high heparin cofactor-II activity from the brine shrimp *Artemia franciscana*.** S. F. Chavante, E. A. Santos, F. W. Oliveira, M. Guerrini, G. Torri, B. Casu, C. P. Dietrich, H. B. Nader. *Int J Biol Macromol.*, 27, 49-57 (2000)

1999

194. **Il profilo composizionale degli oligosaccaridi potrebbe differenziare il latte delle diverse specie animali.** D. Beccati, B. Casu, A. Naggi, L. Sturiale, G. Torri, G. Coppa, S. Bruni. *CASEUS* 17-20 (1999).

176 **New sorbents containing β -cyclodextrin. Synthesis, characterization, and sorption properties.** K. Janus, G. Crini, V. El-Rezzi, M. Morcellet, A. Cambiaghi, G. Torri, A. Naggi, C. Vecchi. *Reactive and Funtional Polymers*, 42, 173-180 (1999).

193. **Un'oasi nella ricerca chimica e biochimica: l'Istituto G. Ronzoni. S. Venturini. La Chimica e l'Industria** , 81, 1323 (1999).

192. **Polyphenolic glycosides from African proteaceae.** L. Verotta, F. Orsini, F. Pelizzoni, G. Torri, C. B. Rogers. *J. Nat. Prod.* 62, 1526-1531 (1999).

191. **Sorption properties towards substituted phenolic derivatives in water using macroporous polyamines containing β -cyclodextrin.** G. Crini, L. Janus, M. Morcellet, G. Torri, N. Morin. *J. Appl. Polym. Sci.* 73, 2903-2910 (1999).

190. **Formation of two particular structures between β -cyclodextrin and bifonazole: β -cyclodextrin-bifonazole and (β -cyclodextrin)-bifonazole (where $2 < i < 3$).** N. Morin, G. Crini, C. Cosentino, J. Millet, J. Vebrel, J.C. Rouland. *J. Chem. Soc., Perkin Trans. 2*, 2647-2651 (1999).

189. **P34cdc2 kinase - a new member of the family of heparin-interacting proteins.** N. Parthasarathy, L. F. Gotow, K. J. Bame, A. Naggi, B. Casu, T.E. Kute, W. D. Wagner, M. J. Forster, B. Mulloy. *J. Biol. Chem.* ? ...

188. **New insights on the specificity of heparin and heparan sulfate lyases from *Flavobacterium heparinum* revealed by the use of synthetic derivatives of K5 polysaccharide from *E. coli* and 2-O-desulfated heparin.** H. B. Nader, E. Y. Kobayashi, S. F. Chavante, I. L.S. Tersariol, R. A. B. Castro, S. K. Shinjo, A. Naggi, G. Torri, B. Casu, C. P. Dietrich. *Glycoconj. J.*, 16, 265-70 (1999).

187. **Interaction of lignin and polysaccharides in beech wood fagus during drying processes.** B. Kosikova, M. Hricovini, C. Cosentino. *Eur. J. Wood and Wood Products* ... (1999)

186. **Structural characterization of low-molecular weight heparins.** B. Casu, G. Torri. *Seminars Thromb. Hemost.* 25 (3), 17-25 (1999).

185. **Novel cellulosic ethers with low degrees of substitution - Magic angle spinning NMR study.** G. Torri, C. Cosentino, F. Delben, R. Simonutti, P. Sozzani. *Carbohydr. Polymers* 40, 125-135 (1999).

184. **Synthesis of disaccharidic sub-units of a new series of heparin related oligosaccharides.** B. La Ferla, L. Lay, M. Guerrini, L. Poletti, L. Panza, G. Russo. *Tetrahedron*, 55, 867-9880 (1999).

183. **"Linkage region" sequences of heparins and heparan sulfates. Detection and quantification by NMR spectroscopy.** M. Iacomini, B. Casu, M. Guerrini, A. Naggi, A. Pirola, G. Torri. *Anal. Biochem.*, 274 50-58 (1999).

182. **Introduction of a nitrogen heterocycle into sulfated chitosan oligomers.** F. Santini, G. Crini, C. Cosentino, E. A. Yates, L. Sturiale. *J. Carbohydr. Chem.* 18, 789-801 (1999).

181. **Structure of heparin-derived tetrasaccharide complexed to the plasma protein antithrombin derived from NOEs, J-couplings and chemical shifts.** M. Hricovini, M. Guerrini, A. Bisio. *Eur. J. Biochem.* 261, 1-15 (1999).

1998

180. **Sorption of aromatic compounds in water using insoluble cyclodextrin polymers.** G. Crini, S. Bertini, G. Torri, A. Naggi, D. Sforzini, C. Vecchi, L. Janus, Y. Lechhiri, M. Morcellet. *J. Appl. Polym. Sci.* 68, 1973-1978 (1998).

179. **Macroporous polyamines containing cyclodextrin: synthesis, characterization, and sorption properties.** G. Crini, L. Janus, M. Morcellet, G. Torri, A. Naggi, S. Bertini, C. Vecchi. *J. Appl. Polym. Sci.* 69, 1419-1427 (1998).

178. **Solid state NMR spectroscopy study of molecular motions in cyclomaltoheptaose (?-cyclodextrin) crosslinked with epichlorhydrin.** G. Crini, S. Bertini, G. Torri, A. Naggi, D. Sforzini, C. Vecchi, L. Janus, Y. Lechhiri, M. Morcellet. *Carbohydr. Res.* 308, 37-45 (1998).

177. **Characterization and properties of cellulose isolated from the Crambe abissinica hull.** G. Gastaldi, G. Capretti, B. Focher, C. Cosentino. *Ind. Crops Products* 8, 205-218 (1998).

176. **Electrochemical reduction of halogenosugars on silver: a new approach to C-disaccharide-like mimics.** M. Guerrini, P. Mussini, S. Rondinini, G. Torri, E. Vismara. *Chemical Commun.* 15, 1575-1576 (1998).

1997

175. **Synthesis of stable analogues of glyceroglycolipids.** L. Cipolla, F. Nicotra, E. Vismara, M. Guerrini. *Tetrahedron* 53, (17) 6163-6170 (1997).

174. **Electrostatic interactions between human leukocyte elastase and sulfated glycosaminoglycans: physiological implications.** G. Kostoulas, D. Horler, A. Naggi, B. Casu, A. Baici. *Biol Chem.* 378, 1481-1489 (1997).

173. **Motional properties of E. Coli polysaccharide K5 in aqueous solution analyzed by NMR relaxation measurements.** M. Hricovini, M. Guerrini, G. Torri, B. Casu. *Carbohydr. Res.* 300, 69-76 (1997).

172. **Modifications under basic conditions on the minor sequences of heparin containing 2,3 or 2,3,6 sulphated glucosamine residues.** F. Santini, A. Bisio, M. Guerrini, E. A. Yates. *Carbohydr. Res.* 302, 103-108 (1997).

171. **Galactosphingolipid from the lichen Ramalina Celastri.** M. J. Machado, M. Guerrini, P. A. J. Gorin, G. Torri, M. Iacomini. *Phytochemistry* 45, 651-657 (1997).

170. **NMR characterization of N-benzyl sulfonate derivatives of chitosan.** G. Crini, M. Guerrini, B. Martel, M. Weltrowski, G. Torri, M. Morcellet. *Carbohydr. Polymers*, 33, 145-151 (1997).

169. **C-Glucosyl quinones and related spacer-connected C-disaccharide.** L. Cipolla, M. Guerrini, F. Nicotra, G. Torri and E. Vismara. *Chem. Commun.* 1617-1618 (1997)

168. **Linear cyclodextrin-poly(vinylamine): synthesis and NMR characterization.** G. Crini, G. Torri, M. Guerrini, B. Martel, Y. Lekchiri, M. Morcellet. *Eur. Polymer J.* 33, 1143-1151 (1997).

167. **Synthesis, NMR study and preliminary sorption properties of two N-benzyl sulfonated chitosan derivatives.** G. Crini, G. Torri, B. Martel M. Weltrowski, M. Morcellet and C. Cosentino. *J. Carbohydr. Chem.*, 16, 681-689 (1997).

166. **Evidence for a heparin derivative containing an N-sulfated aziridine ring that retains high anti-Xa activity.** E.A. Yates, F. Santini, A. Bisio, C. Cosentino. *Carbohydr. Res.* 298, 335-340 (1997).

165. **Interaction of lignin and polysaccharides in beech wood fagus sylvatica during drying processes.** B. Kosikova, M. Hricovini, C. Cosentino. *J. Wood Chem. Technol.* 300, 69-76 (1997).

164. **Synthesis and biological effects of N-alkylamine-labeled low-molecular mass dermatan sulfate.** Malsh, R., Guerrini, M., Berti, C., Naggi, A., Torri, G., Casu, B., Harenberg, J. *Seminars Thromb. Hemost.* 23; 99-107 (1997).

1996

163. **Reactivity of glucosyl radical in the presence of phenols.** A. Alberti, M. A. Della Bona, D. Macciantelli, F. Pelizzoni, G. Sello, G. Torri, E. Vismara. *Tetrahedron*, 52, 10241-10248, (1996)

162. **Glycomimetics via a new glycoexoenitols-malonyl radical C-C bond formation.** L. Cipolla, L. Liguori, F. Nicotra, G. Torri, E. Vismara. *Chem. Commun.* 1253 (1996)

161. **Synthesis of stable analogues of glyceroglycolipids.** L. Cipolla, F. Nicotra, E. Vismara, M. Guerrini. *Tetrahedron* 17, 6163-6170 (1996)

160. **HPLC of structural isomers using a cyclodextrin-poly(vinylamine) coated silica column. Synthesis and characterization of cyclodextrin bonded stationary phases by solid state NMR.** G. Crini, M. Morcellet, G. Torri. *J. Chromatogr. Sci.*, 41, 477-484, (1996)

159. **High performance liquid chromatography of structural isomers using a cyclodextrin-poly(vinylamine) coated silica column. Synthesis and characterization of cyclodextrin bonded stationary phases by solid state NMR.** G. Crini, G. Torri, M. Morcellet. *J. Chromat. Sci.* 34, 477-484 (1996).

158. **Binding of ^{125}I - β FGF to rat aortic smooth muscle cells: effect of a series of structurally defined heparinoids.** L. Giorgini, A. Naggi, G. Ghiselli. In: *Nonanticoagulant glycosaminoglycans* (J. Harenberg and B. Casu, eds), Plenum Press, New York, 1996, pp. 189-199.

157. **Protein binding of glycosaminoglycans: searching for specificity.** B. Casu. In: *Nonanticoagulant glycosaminoglycans*. (J. Harenberg and B. Casu, eds.) Plenum Press, New York, 1996, pp. 89-99.

156. **Pharmacology of synthetic and biotechnology-derived homologues and analogues of heparin.** W. Jeske, J. Fareed, D. Hoppensteadt, B. Casu. In: *Nonanticoagulant glycosaminoglycans* (J. Harenberg and B. Casu, eds) Plenum Press, New York, 1996, pp. 65-87.

155. **Simulation of glycosaminoglycan structures by chemical modification of polysaccharides K5 and K4.** A. Naggi. In: *Nonanticoagulant glycosaminoglycans* (J. Harenberg and B. Casu, eds). Plenum Press, New York, 1996, pp. 59-64.

154. **New NMR spectroscopic approaches for the structural characterization of glycosaminoglycans.** G. Torri. In: Nonanticoagulant glycosaminoglycans (J. Harenberg and B. Casu, eds) Plenum Press, New York, 1996, pp 15-25.

153. **HPLC of structural isomers using cyclodextrin-poly(alkylamine) systems coated on silica beads.** G. Crini, B. Martel, G. Torri, M. Morcellet. Proc. VIII Int. Symp. on Cyclodextrins (J. Szejtli and L. Szenté, eds.) Kluwer Ac. Publ. New York, 1996, pp 667-670.

152. **Sorption of textile dyes on β -cyclodextrin-epichloridrin gels.** Y. Shao, B. Martel, M. Morcellet, M. Weltrowski, G. Crini. Proc. VIII Int. Symp. on Cyclodextrins (J. Szejtli and L. Szenté, eds.) Kluwer Ac. Publ. New York, 1996, pp. 571-574.

151. **Catalytic esterolysis of p-nitrophenyl acetate by β -cyclodextrin associated to poly(vinylamine) and a benzoylated derivative.** B. Martel, M. Morcellet, G. Crini. Proc. VIII Int. Symp. on Cyclodextrins (J. Szejtli and L. Szenté, eds.) Kluwer Ac. Publ. New York, 1996, pp. 273-276.

150. **^1H and ^{13}C spectral assignments for the major sequences of twelve systematically modified heparin derivatives.** E. A. Yates, F. Santini, M. Guerrini, A. Naggi, G. Torri, B. Casu. Carbohydr. Res. 294, 15-27 (1996).

149. **Characterization of sulfation patterns of beef and pig mucosal heparins by nuclear magnetic resonance spectroscopy.** B. Casu, M. Guerrini, A. Naggi, G. Torri, L. De Ambrosi, G. Boveri, S. Gonella, Cedro, L. Ferro, E. Lanzarotti, M. Paternò, M. Attolini, M. G. Valle. *Arzneim.-Forsch./Drug Res.* 46, 472-477 (1996).

148. **^{13}C NMR study of solid state reaction of cellulose with lignin monomers.** B. Kosikova, M. Hricovini, R. Simonutti. *Holzforshung* 50, 335-341 (1996).

147. **Semi-synthetic heparins with 2-deoxy-2-sulfamino- α -L-iduronic acid residues: chemical reactivity and biological activity.** F. Ungarelli, S. Piani, M. Barbanti, R. Milani, G. Torri, B. Casu. *J. Carbohydr. Chem.* 14, 563-573, 1996.

1995

146. **High performance liquid chromatography of structural isomers using a β -cyclodextrin-poly(allylamine) coated silica column.** G. Crini, G. Torri, Y. Lekchiri, B. Martel, L. Janus, M. Morcellet. *Chromatographia* 41, 424-430 (1995).

145. **Structural and functional properties of heparin analogues obtained by chemical sulfation of E. coli capsular polysaccharide.** N. Razi, E. Feizi, I. Björk, A. Naggi, B. Casu, U. Lindahl. *Biochem. J.* 309, 429-430 (1995).

144. **Pharmacologic profile of a low-molecular weight heparin depolymerized by γ -irradiation.** W. Jeske, O. Lobal, S. Gonella, G. Boveri, G. Torri, L. De Ambrosi, J. Fareed. *Seminars Thromb. Hemost.* 21, 201-211 (1995).

143. **Active sites of dermatansulfate for Heparin Cofactor II. Isolation of a nonasaccharide fragment containing four disaccharide sequences [α-L-iduronic acid-2-O-sulfate (1,3)-β-D-N. acetylgalactosamine 4 sulfate].** G. Mascellani, L. Liverani, A. Prete, G.L. Bergonzini, P. Bianchini, L. Silvestro, G. Torri, A. Bisio, M. Guerrini, B. Casu. *J. Carb. Chem.* 14, 1165-1177 (1995).

142 **Differentiation of beef and pig mucosal heparins by NMR spectroscopy.** B. Casu, M. Guerrini, G. Torri, S. Gonella, G. Boveri. *Thromb. Hemost.* 74, 1205 (1995).

141. **Magnetic bead protamine-linked microtiter assay for detection of heparin using iodinated low-molecular-mass heparin-tyramine.** J. Harenberg, R. Malsch, M. Guerrini, G. Torri, B. Casu, D.L. Heene. *Thromb Res.* 79, 207-216 (1995).

140. **Conformational analysis of heparin epoxide in aqueous solution. NMR relaxation study.** M. Hricovini, M. Guerrini, G. Torri, S. Piani, F. Ungarelli. *Carbohydr. Res.* 277, 11-23 (1995).

139. **Correlazione fra struttura e digeribilità in vitro dell'amido: studio preliminare.** G. Torri, A. Naggi, C. Cosentino, L. Pizzoferrato, A. Aguzzi, M. Capelloni. *Atti Convegno Nazionale Chimica degli Alimenti*, pp. 1121-1127 (1995).

138. **Dynamics in aqueous solution of the pentasaccharide corresponding to the binding site of heparin for antithrombin III studied by NMR relaxation measurements. Effect of internal motion, anisotropic tumbling and cross-correlation.** H. Hricovini, G. Torri. *Carbohydr. Res.* 268, 159-175 (1995).

1994

137. **Different effects of mucosal, beef lung, and chemically modified heparin on selected biological properties of basic fibroblast growth factor.** D. Coltrini, M. Rusnati, G. Zoppetti, P. Oreste, G. Grazioli, A. Naggi, M. Presta. *Biochem. J.* 303, 583-590 (1994).

136. **Quantitation of the active site of dermatan sulfate for heparin cofactor II by 1H-NMR.** G. Mascellani, A. Prete, L. Liverani, G. Bergonzini, P. Bianchini, G. Torri, A. Bisio, M. Guerrini, B. Casu. *Analyt. Biochem.* 223, 135-141 (1994).

135. **Protein-binding domains of heparin and other sulfated glycosaminoglycans.** B. Casu. *Carbohydrates in Europe* 11, 18-21 (1994).

134. **Step-by-step observation of the hydration of C3S by cross-polarization magic-angle spinning m.a.s. ²⁹Si nuclear magnetic resonance: the masking effect of D₂O.** A. Comotti, G. Gastaldi, G. Gilioli, G. Torri, P. Sozzani. *Materials Sci.* 29 (1994).

133. **The occurrence of glycolipids in the lichen *Ramalina celastri*.** Machado, P.A.J. Gorin, G. Torri, M. Iacomini. *Brazilian J. Med. Biol. Res.* 27 (1994).

132. **Effects of cross-correlation between dipolar and chemical anisotropy relaxation mechanisms upon the ¹³C relaxation rates in pentasaccharide fragment of heparin.** M. Hricovini, G. Torri. *Chem. Papers* 48, 211-213 (1994).

131 **Heparin-like compounds prepared by chemical modification of capsular polysaccharide from E. coli K5.** B. Casu, G. Grazioli, M. Guerrini, A. Naggi, G. Torri, P. Oreste, F. Tursi, G. Zoppetti, N. Razi, E. Feizi, U. Lindahl. *Carbohydr. Res.* 263, 271-284 (1994).

130 **Biologically-active, heparansulfate-like species by combined chemical and enzymatic modification of the Escherichia coli polysaccharide K5.** B. Casu, G. Grazioli, H.H. Hannesson, B. Jann, K. Jann, U. Lindahl, A. Naggi, P. Oreste, N. Razi, G. Torri, F. Tursi, G. Zoppetti. *Carbohydrate Letters*, 1, 107-114 (1994).

129 **Synthesis of a N'-Alkylamine anticoagulant active low-molecular-mass heparin for radioactive and fluorescent labeling.** R. Malsch, M. Guerrini, G. Torri, G. Lohr, B. Casu, J. Harenberg. *Anal. Biochem.* 217, 255-264 (1994).

128. **Disruption of micellar aggregates of ganglioside GM-1 by complexation with alpha-cyclodextrin.** S. M. Ahmed, B. Casu, A. Cedro, M. Guerrini, E. Lanzarotti, D. Moltrasio, A. Naggi, G. Torri. *Int. J. Pharmaceutics* 109, 99-106 (1994).

127. **NMR analysis of human urines. Influence of intravenous and oral administration of glycosaminoglycans.** G. Torri, A. Bisio, B. Casu, M. Guerrini, A. Naggi, M. C. Nogueira Barbosa, C. Sciorati, L. Silvestro. *Semin. Thromb. Hemostas.* 20 (2), 144-151 (1994).

126. **Preparation and characterization of deuterium-labeled glycosaminoglycans.** A. Naggi, B. Casu, B. Crippa, S. Magnaghi, L. Silvestro, G. Torri. *Semin. Thromb. Hemostas.* 20 (2), 168-175 (1994).

125. **Semisynthesis and analysis of lipophilically modified unfractionated and low molecular mass heparins.** R. Malsch, J. Harenberg, M. Guerrini, G. Torri, B. Casu, D. L. Heene. *Semin. Thromb. Hemostas.* 20 (2) 182-192 (1994).

1993

124. **Synthesis of alkylglucoside-aminobutyric (GABA) and aminohydroxybutyric (GABOB) conjugates.** G. Gastaldi, B. Focher, M. Guerrini, D. Alonso. *J. Carb. Chem.* 13, 1009-1023 (1993).

123. **Structure and contribution to the HCII-mediated inhibition of thrombin of naturally oversulfated DeS sequences.** G. Mascellani, L. Liverani, P. Bianchini, B. Parma, G. Torri, A. Bisio, M. Guerrini, B. Casu. *Biochem. J.*, 296, 639-649 (1993)

122. **Minimal sequence in heparin/heparan sulfate required for binding basic fibroblast factor.** M. Maccarana, B. Casu, U. Lindahl. *J. Biol. Chem.* 268, 28898-28905 (1993)

121. **Alkali-induced optical rotation changes in heparins and heparan sulfates, and their relation to iduronic acid-containing sequences.** S. Piani, B. Casu, E. G. Marchi, G. Torri, F. Ungarelli. *J. Carbohydr. Chem.* 12, 507-521 (1993).

120. **Conformation of the unsaturated uronic acid residues of glycosaminoglycan disaccharides.** M. Ragazzi, D. R. Ferro, A. Provasoli, P. Pumilia, A. Cassinari, G. Torri, M. Guerrini, B. Casu, H.B. Nader, C. P. Dietrich. *J. Carbohydr. Chem.* 12, 523-535 (1993).

119. **Homolytic substitution of quinones by carbohydrate radicals derived from iodo sugars and diazonium salt in DMSO.** E. Vismara, A. Donna, N. Pastore, G. Torri. *Res. Chem Intermed.* 19, (1993) 707-714.

118. **Conformation of iduronic acid-containing glycosaminoglycans. In: Dermatan sulfate proteoglycans (J.E. Scott, ed.).** B. Casu, D.R. Ferro, M. Ragazzi, G. Torri. Portland Press, London, pp. 41-53 (1993).

117. **Characterization of the chemical structure of sulfated glycosaminoglycans using enzymatic digestion; application of liquid chromatography-mass spectrometry with an atmospheric pressure interface.** R. Da Col., L. Silvestro, A. Naggi, G. Torri, C. Baiocchi, D. Moltrasio, A. Cedro, I. Viano. *J. Chromatography* 647, 289-300 (1993).

116. **A comparative study of low density lipoprotein interaction with glycosaminoglycans.** M. Gigli, G. Ghiselli, G. Torri, A. Naggi, V. Rizzo. *Biochim. Biophys. Acta*, 1167, 211-217 (1993).

115. **Reactivity of carbohydrate radicals derived from iodo sugars and dibenzoyl peroxide. Homolytic heteroaromatic and aromatic substitution, reduction, and oxidation.** E. Vismara, A. Donna, F. Minisci, A. Naggi, N. Pastori, G. Torri. *J. Org. Chem.* 58, 959-963 (1993).

114. **Morphology and structure of cellulose materials as studied by MAS NMR spectroscopy.** G. Torri, P. Sozzani, B. Focher. *Molecular Materials to Solids Applications of nuclear magnetic resonance spectroscopies* (ed F. Morazzoni), Polo Editoriale Chimico (1993).

113. **Structure of low-molecular weight chondroitinsulfate.** A. Naggi. *Int. J. Clin. Pharm. Res.* 13, 19-26 (1993).

112. **Heparin and heparin-like polysaccharides.** Casu, B. In: *Polymeric Biomaterials* (S. Dumitriu, Ed.) Marcel Dekker, New York, 1993, pp. 159-178.

1992

111. **A new approach to the stereoselective synthesis of C-nucleosides via homolytic heteroaromatic substitution.** E. Vismara, G. Torri, N. Pastori, M. Marchiandi. *Tetrahedron Letters*, vol.33, 49, 7575-7578 (1992).

110. **Heparin binding to human plasma low-density lipoproteins. Dependence on heparin sulfation degree and chain length.** M. Gigli, A. Consonni, G. Ghiselli, V. Rizzo, A. Naggi, G. Torri. *Biochemistry* 31, 5996-6003 (1992).

109. **High-performance liquid chromatographic-mass spectrometric analysis of oligosaccharides from enzymatic digestion of glycosaminoglycans. Application to human samples.** L. Silvestro, I. Viano, A. Naggi, G. Torri, R. Da Col, C. Baiocchi. *J.Chromatography*, 591, 225-232 (1992).

108. **Applicazioni della spettroscopia 2D NMR.** G. Torri. In: *Metodi Spettroscopici di Caratterizzazione dei Polimeri*, Associazione Italiana di Scienza e Tecnologia delle Macromolecole, 1992, ed. Pacini.

107. **Chitosans from Euphasia superba. Characterization of solid state structure.** M. Terbojevich, A. Cosani, B. Focher, A. Naggi, G. Torri. *Carbohydr. Polymers*, 18, 43-49 (1992).

106. **Chitosans from Euphasia superba. Solution properties.** M. Terbojevich, A. Cosani, B. Focher, A. Naggi, G. Torri. *Carbohydr. Polymers*, 18, 35-42 (1992).

105. **Structural differences between chitin polymorphs and their precipitates from solutions - Evidence from CP-MAS ¹³C-NMR, FT-IR and FT-Raman spectroscopy.** B. Focher, A. Naggi, G. Torri, A. Cosani, M. Terbojevich. *Carbohydr. Polymers* 18, 97-102 (1992).

1991

104. **Electrophoretic and Nuclear Magnetic Resonance characterization of non-heparin glycosaminoglycans.** G. Torri. *Seminars Thromb. Hemost.*, 17 (1), 23-28 (1991).

103. **Structural features and binding properties of chondroitin sulfates, dermatan sulfate, and heparan sulfate.** B. Casu, *Seminars Thromb. Hemost.*, 17 (1), 9-13 (1991).

102. **Pharmacologic profile of sulfamino-galactosaminoglycans.** R. Pescador, R. Porta, M. Mantovani, G. Prino, B. Casu, A. Naggi, G. Torri, J. H. Walenga, D. A. Hoppensteadt, J. Fareed. *Seminars Thromb. Hemost.*, 17 (1), 74-79 (1991).

101. **Characterisation of glycosidic linkage by infrared and Raman spectroscopy in C-H stretching region: α,α -trehalose and α,α -trehalose-2,3,4,6,6-d₁₀.** S. Abbate, G. Conti, A. Naggi. *Carbohydr. Research*. 210, 1-12 (1991).

100. **Characterization of glycosaminoglycan components of Matrix.** A. Naggi. *Drugs under experimental and clinical research*. 17, 21-25 (1991).

99. **Inclusion complexes of broprimine with β -cyclodextrin in solution and in solid state.** S.M. Ahmed, A. Naggi, M. Guerrini, B. Focher. *Int. J. Pharmaceutics* 77, 247-254 (1991).

1990

98. **Heparin structure.** B. Casu. *Haemostasis*, 20, 62-73 (1990).
97. **Biosynthesis of heparin. Availability of glucosaminyl-3-O-sulfation sites.** M. Kusche, G. Torri, B. Casu, U. Lindahl. *J. Biol. Chem.* 265, 7292-7300 (1990).
96. **Conformer populations of L-iduronic acid residues in glycosaminoglycan sequences.** D. R. Ferro, A. Provasoli, M. Ragazzi, B. Casu, G. Torri, V. Bossennec, B. Perly, P. Sinaÿ, M. Petitou, J. Choay. *Carbohydr. Res.* 19, 157-167 (1980).
95. **Gamma isotactic polypropylene: a MAS ¹³C NMR study of a crystalline polymer with non-parallel chains.** S. Bruckner, S.V. Meille, P. Sozzani, G. Torri. *Makromol. Chem. Rapid Commun.* 11, 55-60 (1990).
94. **Dipyridamole-cyclodextrin complex: preparation and characterization.** G. Torri, A. Naggi, G. B. Fregnan, A. Trebbi. *Pharmazie* 45, 193-195 (1990).
93. **Neutral and ionic alkylglucopyranosides. Synthesis, characterization and properties.** B. Focher, G. Savelli, G. Torri. *Chem. Phys. of Lipids* 53, 141-155 (1990).
92. **Alkaline N-deacetylation of chitin enhanced by flash treatments. Reaction kinetics and structure modifications.** B. Focher, P.L. Beltrame, A. Naggi, G. Torri. *Carbohydr. Polymers*, 12, 405-418 (1990).
91. **Structure, shape and function of glycosaminoglycans. Casu, B. In: New Trends in Haemostasis.** (Harenberg, J, Heene, D.L., Stehle, G., Schletter, G., Ed.s), Springer Verlag 1990, pp. 4-11.
90. **Interaction of cyclodextrins (cyclomalto-oligosaccharides) with glycolipids: NMR studies of aqueous systems of cyclo-maltohexaose and glycosides.** B. Casu, A. Grenni, A. Naggi, G. Torri, M. Virtuani. *Carbohydr. Res.*, 200, 101-109 (1990).
89. **Anticoagulant and antithrombotic effects of chemically-modified heparins and pentosanpolysulfate.** K. Krupinski, H.K. Breddin, B. Casu. *Haemostasis*, 20, 81-92, 1990.
88. **Structure of heparin and heparin fragments.** B. Casu, *Ann. N.Y. Acad. Sci.* 556, 1-17 (1999).
87. **Methods of structural analysis.** B. Casu, in: *Heparin: Chemistry and Biology*, Eds, D.A. Lane, U. Lindhal, Eds., Arnold Prss, London, 25....(1989).
86. **Structure and activity of mammalian glycosaminoglycans. B. Casu, in: Diagnosis and treatment of old age dementia.** *Mod. Probl. Pharmacopsychiatry*, B.E. Lehman Ed., 57-67 (1989), Basel.

1989

85. **Further purification of heparin reduces its bleeding effects in the mesenteric vessels of rats.** G. Andriuoli, D. D'Arty, G. Galimberti, M. Sarrè, G. Zoppetti, B. Casu, P. Oreste, G. Torri. *Ann. N. Y. Acad. Sci.*, 556, 416-418 (1989).

84. **Bleeding effects associated with heparin contaminants.** J. Pangrazzi, P. Oreste, A. Naggi, G. Torri, A. Maggi, M.B. Donati, B. Casu. *Ann. New York Acad. Sci.*, 556, 468-470 (1989).

83. **Sulfamino-galactosaminoglycans, a new class of semi-synthetic polysaccharides. Preparation, characterization, and lipase-releasing properties.** A. Naggi, G. Torri, P. Angiuli, B. Casu, M. Mantovani, R. Pescador, R. Porta. In: *Biomedical and biotechnological advances in industrial polysaccharides*. Gordon and Breach, New York, 1989, pp. 101-108.

82. **Caratterizzazione preliminare degli essudati di origine fitoplanctonica raccolti in Adriatico nell'estate 1989.** R. Marchetti, M. Iacomini, G. Torri, B. Focher. *Acqua Aria*, 883-887, (1989).

81. **Solution studies of chitosan 6-O-sulfate.** M. Terbojevich, C. Carraro, A. Cosani, B. Focher, A. Naggi, G. Torri. *Makromol. Chem.* 190, 1-9 (1989).

80. **Micelles of 1-alkyl glucoside and maltoside: anomeric effects on structure and induced chirality.** B. Focher, G. Savelli, G. Torri, G. Vecchio, D. C. Mc Kenzie, D. F. Nicoli, C.A. Bunton. *Chem. Phys. Lett.* 158, N 6 (1989).

79. **Homogeneous-phase synthesis of chitin derivatives.** M. Terbojevich, A. Cosani, C. Carraro, G. Torri. In: *Chitin and Chitosan*, (G. Skjak-Braek, T. Anthonsen, P. Sanford, ed.s), Elsevier Applied Sciences, 407-414 (1989).

78. **Sulfopropylated hemicellulose: synthesis and NMR characterization.** B. Focher, A. Marzetti, A. Naggi, G. Torri. *Makromol. Chem.* 190, 129-138 (1989).

1988

77. **Interactions of cyclodextrins with glycolipids. 1H-NMR studies.** B. Casu, A. Grenni, A. Naggi, G. Torri. *Advances in Inclusion Science*, Kluwer Academic Publishers. (1988) 189-195.

76. **Inclusion complexes of naphthols with cyclodextrins in aqueous solution. A 1H-NMR study.** A. Naggi, C. Vecchi, G. Torri. *Advances in Inclusion Science*, Kluwer Academic Publishers, (1988), 215-219.

75. **Caratterizzazione di polimeri idrosolubili con metodi spettroscopici.** B. Casu, G. Torri. (1988) (?)

74. **Maintenance of heparan sulfate structure during evolution: chemical and enzymic degradation and ^{13}C -NMR-spectral evidence.** H. B. Nader, T. M. P. C. Ferreira, L. Toma, S. F. Chavante, C. P. Dietrich, B. Casu, G. Torri. *Carbohydr. Res.* 184, 292-300 (1988).

73. **Conformational flexibility: a new concept for explaining binding and biological properties of iduronic acid-containing glycosaminoglycans.** B. Casu, M. Petitou, M. Provasoli, P. Sinaÿ. *Trends Biochem. Sci.*, 13, 221-225 (1988).

1987

72. **Bleeding associated with heparin contaminants.** B. Casu, A. Naggi, P. Oreste, G. Torri, J. Pangrazzj, A. Maggi, M. Abbadini, M. B. Donati. *Lancet*, 1-6 (1987).

71. **Conformation of the pentasaccharide corresponding to the binding site of heparin to antithrombin-III.** M. Ragazzi, D. R. Ferro, B. Perly, G. Torri, B. Casu, P. Sinaÿ, M. Petitou, J. Choay. *Carbohydr. Res.* 165, C1-C5, (1987).

70. **Supersulfated heparin fragments, a new type of low molecular weight heparin.** A. Naggi, G. Torri, B. Casu, J. Pangrazzi, M. Abbadini, M. Zametta, M. B. Donati, J. Larsen, J.-P. Maffrand. *Biochem. Pharmacol.* 36, 1895-1900 (1987).

1986

69. **High resolution solid-state ^{13}C -NMR spectroscopy of polysaccharides.** G. Torri. In: **Industrial polysaccharides. The impact of biotechnology and advanced methodologies.** (S.S. Stivala, V. Crescenzi, I.C.M. Dea, Ed.s) Gordon and Breach, New York 1986, 361-366.

68. **Trends in the development of oligo- and polysaccharides of medical interest.** Casu, B.. In: **Industrial polysaccharides. The impact of biotechnology and advanced methodologies.** (S.S., Stivala, V. Crescenzi, I.C.M. Dea, Ed.s) Gordon and Breach, New York 1986, 189-193.

67. **Synthesis of heparin. A chemical synthesis of the pentasaccharide O-(2-deoxy-2-sulfamido-6O-sulfo- α -D-glucopyranosil)-(1-4)-O-(β -D-glucopyranosyluronic acid)-(1-4)- O-(2-deoxy-2-sulfamido-3,6-di-O-sulfo- α -D-glucopyranosil)-(1-4)-O-(2-O-sulfo- α -L-idopyranosyluronic acid)-(1-4)-2-deoxy-2-sulfamido-6-O-sulfo- α -D-glucopyranose decasodium salt, a heparin fragment having high affinity for antithrombin III.** M. Petitou, P. Duchaussoy, I.Lederman, J. Choay, P. Sinaÿ, J.-C. Jaquet, G. Torri. *Carbohydr. Res.* 147, 221-236, (1986).

66. **Synthesis of heparin fragments: a methyl-pentaoside with high affinity for antithrombin III.** M. Petitou, P. Duchaussoy, I. Lederman, J. Choay, J.-C. Jaquet, G. Torri. *Proceedings XIIIth International Carbohydrate Symposium*, 1-16 (1986).

65. **High molecular weight chitosan 6-O-sulfate. Synthesis, ESR and NMR characterization.** B. Focher, G. Torri, A. Massoli. *Makromol. Chem.* 187, 2609-2620 (1986).

64. **Branched chitosans with N-acetyl-glucosamine oligosaccharide side-chains.** B. Casu, M. Colombo, T. Compagnoni, A. Naggi, E. Pivari, G. Torri. *Chitin in Nature and Technology*, 309-310, (1986).

63. **6-O sulfation of chitosan in the form of copper(II) complex by sulfur trioxide-pyridine.** B. Focher, A. Massoli, G. Torri, A. Gervasini, F. Morazzoni. *Chitin in Nature and Technology*, 306-308 (1986).

62. **Synthesis and physico-chemical properties of the polyampholyte chitosan 6-sulfate.** A. Naggi, G. Torri, T. Compagnoni, B. Casu. *Chitin in Nature and Technology*, 371-377 (1986).

61. **Retention of antilipemic activity by periodate-oxidized non-anticoagulant heparins.** B. Casu, G. Diamantini, G. Fedeli, M. Mantovani, P. Oreste, R. Pescador, R. Porta, G. Prino, G. Torri, G. Zoppetti. *Arzneim.-Forsch./Drug Res.* 36, 637-642 (1986).

60. **Evidence for conformational equilibrium of the sulfated L-iduronate residue in heparin and in synthetic heparin mono- and oligosaccharides: NMR and force-field studies.** D. R. Ferro, A. Provasoli, M. Ragazzi, G. Torri, B. Casu, G. Gatti, J.-C. Jacquinet, P. Sinaÿ, M. Petitou, J. Choay. *J. Amer. Chem. Soc.*, 108, 6773-6778 (1986).

59 **Controversial glycosaminoglycan conformations.** B. Casu, J. Choay, D. R. Ferro, G. Gatti, J.-C. Jacquinet, M. Petitou, A. Provasoli, M. Ragazzi, P. Sinaÿ, G. Torri. *Nature*, 322, 215-216, (1986)

58. **Trends in the development of oligo- and polysaccharides of medical interest.** B. Casu, in: *Industrial polysaccharides*, S.S. Stivala, M. Dea, Eds., Gordon and Breach, 189-193 (1986).

1985

57. **Antithrombotic and bleeding effects of a low molecular weight heparin fraction.** J. Pangrazzi, M. Abbadini, M. Zametta, A. Naggi, G. Torri, B. Casu and M.B. Donati. *Biochemical Pharmacology* 34, 3305-3308 (1985).

56. **Stereoregular acyclic polyalcohols and polyacetates from cellulose and amylose.** B. Casu, A. Naggi, G. Torri, G. Allegra, S. V. Meille, A. Cosani, M. Terbojevich. *Macromolecules* 18, 2763-2767 (1985).

55. **Structure and biological activity of heparin.** B. Casu. *Adv. Carbohydr. Chem. Biochem.*, 43, 51-135 (1985).

54. **Fractionation and structural features of two heparin families with high antithrombotic, antilipemic and anticoagulant activities.** P. Bianchini, B. Osima, B. Parma, H. B. Nader, C. P. Dietrich, B. Casu, G. Torri. *Arzneim.-Forsch./Drug Res.* 35, 1215-1219 (1985).

53. **Mono- and bidimensional 500 MHz ¹H-NMR spectra of a synthetic pentasaccharide corresponding to the binding sequence of heparin to antithrombin-III: evidence for conformational peculiarity of the sulfated iduronate residue.** G. Torri, B. Casu, G. Gatti, M. Petitou, J. Choay, J.C. Jaquinet, P. Sinay. *Biochem. Biophys. Res. Comm.* 128, 134-140 (1985).

52. **Specific antibodies to diphtheria toxin and type 6A pneumococcal capsular polysaccharide induced by a model of semi-synthetic glyconjugate antigen.** M. Porro, P. Costantino, S. Vitti, F. Vannozzi, A. Naggi, G. Torri. *Mol. Immunol.* 22, 907-919 (1985).

51. **Low molecular weight heparins and bleeding.** J. Pangrazzi, M. Abbadini, M. Zanetta, B. Casu. *M.B. Donati, Thromb. Haemost.* p.158 (1985).

1984

50 **Total synthesis of a heparin pentasaccharide fragment having high affinity for antithrombin III.** P. Sinaÿ, J.C. Jacquinet, M. Petitou, P. Duchaussoy, I. Lederman, J. Choay, G. Torri. *Carbohydr. Res.* 132, C5 - C9 (1984).

49. **Synthesis of heparin fragments. A chemical synthesis of the trisaccharide O-(2-deoxy-2-sulfamido-3,6-di-O-sulfo- α -D-glucopyranosyl)-(1-4)-O-(2-O-sulfo- α -L-idopyranosyl-uronic acid)-(1-4)-2-deoxy-2-sulfamido-6-O-sulfo-D-glucopyranose heptasodium salt.** J.C. Jacquinet, M. Petitou, P. Duchaussoy, I. Lederman, J. Choay, G. Torri, P. Sinaÿ. *Carbohydr. Res.* 130, 221-241 (1984).

48. **Structure of heparins and their fragments.** B. Casu. *Nouv. Rev. Fr. Hématologie*, 26, 2111-219 (1984).

47. **Dicarboxyamylose and dicarboxycellulose, stereoregular polyelectrolytes: binding of calcium and magnesium ions.** V. Crescenzi, M. Dentini, C. Meoli, B. Casu, A. Naggi, G. Torri. *Int. J. Biol. Macromol.* 6, 142- 144, (1984)

46. **Dicarboxyamylose and dicarboxycellulose, stereoregular polyelectrolytes: physicochemical characterization and interaction with divalent cations.** B. Casu, U. Gennaro, S. V. Meille, M. Morrone, A. Naggi, M. S. Occhipinti, G. Torri. *Int. J. Biol. Macromol.* 6, 89-92 (1984).

45. **Conformation of individual residues and chain segments of glycosaminoglycans in solution by spectroscopic methods.** B. Casu. In: **Molecular biophysics of the extracellular matrix.** (F. Arnott, D.A. Rees, E. Morris, ed.s). Humana Press, Clifton, NJ, 1984, pp. 69-93.

44. **Stereoregular acyclic polymers from glycol-split polysaccharides.** In: **New developments in industrial polysaccharides.** V. Crescenzi., I.C.M. Dea, S.S. Stivala, Eds., Gordon and Breach, 321-324 (1984).

1983

43. **Structure-activity relationship in heparin: a synthetic pentasaccharide with high affinity for antithrombin III and eliciting high anti-Factor Xa activity.** J. Choay, P. Petitou, J.C. Lormeau, P. Sinay, B. Casu, G. Gatti. *Biochem. Biophys. Res. Comm.*, 116, 492-499 (1983).

42. **High selectivity in the partial degradation of an extracellular polysaccharide of *Rhizobium japonicum* with liquid hydrogen fluoride: NMR-spectroscopic study.** A. J. Mort, J.P. Utile, G. Torri, A. S. Perlin. *Carbohydr. Res.* 121, 221-232 (1983).

41. **Correlation between structure, fat-clearing and anticoagulant properties of heparins and heparan sulfates.** B. Casu, E. A. Johnson, M. Mantovani, B. Mulloy, P. Oreste, R. Pescador, G. Prino, G. Torri, G. Zoppetti. *Arzneim.-Forsch./Drug Res.* 33, 135-142 (1983).

40. **Solution properties of a new polyelectrolyte derived from the polysaccharide scleroglucan.** V. Crescenzi, A. Gamini, G. Paradossi, G. Torri. *Carbohydr. Polym.* 3, 273-286, (1983).

1982

39. **Chemical derivatization of cellulosic residues 1. Sulphoalkylation of hemicelluloses.** B. Focher, A. Marzetti, M. Cattaneo, V. Sarto, G. Torri. *Carbohydr. Polym.* 2, 290-295 (1982).

38. **Structure and conformation of polyalcohols and polyacids obtained from periodate oxyamylose and oxycellulose.** B. Casu, V. Meille, A. Naggi, P. Su, G. Torri, G. Zoppetti. *Carbohydr. Polym.* 2, 283-287(1982).

37. **Structure and conformation of polysaccharides by NMR spectroscopy.** B. Casu, *Carbohydr. Polym.* 2, 247-253 (1982).

36. **Recent observations on the relationships between chemical structure and biological activity of sulfomucopolysaccharides.** B. Casu In: *Therapeutic selectivity and risk-benefit assessment of hypolipidemic drugs.* G. Ricci et al, Eds, Raven Press, 201-207 (1982).

35. **Complexes of heparin with poly(alkylenimines): competitive binding with methylene blue.** B. Casu, G. Torri, M. Legramandi, P. G. Righetti. *Carbohydr. Res.* 104, 299-308 (1982)

34. **Spectroscopic methods.** A.S. Perlin, B. Casu. In: *The Polysaccharides* (G.O. Aspinall, ed.), Vol. 1, Academic Press, New York 1982, pp. 133-193.

1981

33. **The structure of heparin oligosaccharide fragments with high anti-(factor Xa) activity containing the minimal antithrombin III-binding sequence. Chemical and ¹³C-NMR studies.** B. Casu, P. Oreste, G. Torri, G. Zoppetti, J. Choay, J.C. Lormeau, M. Petitou, P. Sinay. *Biochem. J.* 197, 599-609, (1981).

32. **Heparin and heparin-like substances. New concepts of structure and activity.** B. Casu, Pharmacol. Res. Comm. 13, 717-719 (1981).

1980

31. **Anti-Xa active heparin oligosaccharides.** J. Choay, J.C. Lormeau, M. Petitou, P. Sinaÿ, B. Casu, P. Oreste, G. Torri, G. Gatti. Thrombosis Res. 18, 573-578, (1980).

30 **Absorption by the rat intestinal tract of fluorescein-labelled pig duodenal glycosaminoglycans.** R. Pescador, G. Diamantini, M. Mantovani, S. Malandrino, A. Riva, B. Casu, P. Oreste. Arzneimitt.-Forschung.(Drug Reseach) 30:1893-1896, (1980)

29. **Electrophoretic evidence of heparin heterogeneity.** P. Oreste, G. Torri. Italian J.Biochem. 29, 4, (1980).

28. **Glycosaminoglycans from pig duodenum.** B. Casu, M. Moretti, P. Oreste, A. Riva, G. Torri, J.R. Vercellotti. Arzneim.-Forsch. (Drug Res.) 30, 1889-1892, (1980).

27. **Fingerprinting of heparin by low-amperage electrophoresis in barium acetate.** P. Oreste and G. Torri. J.Chromatography, 398-401, (1980).

26. **Interaction of aluminates with carbohydrates and aldonates.** B. Casu, M. Chiruzzi, F. Tegiacchi, G. Zoppetti. In: Proceedings 7th Intern. Congress on the Chemistry of Cement. IV/558-563 (1980).

25. **Polisaccaridi di riserva della Spirulina platensis.** B. Casu, A. Naggi, J.R. Vercellotti. Atti del convegno: Prospettive della coltura di Spirulina in Italia, Firenze, 145-153 (1980).

1979

24. **Combined enzymic and NMR methods for the characterization of chondroitin sulfates.** B. Casu, G. Gatti, P. Oreste, G. Torri, J.R. Vercellotti. Italian J. Biochem., 28, 4, (1979).

23. **Fractionation and characterization of glycosaminoglycans of mammalian origin.** B. Casu, G. Torri, J.R. Vercellotti. Pharmacol. Res. Commun., 11, 297-310, (1979).

22. **Resolution-enhanced ¹H-NMR spectra of dermatan sulfate and chondroitin sulfates: conformation of the uronic acid residues.** G. Gatti, B. Casu, G. Torri, J.R. Vercellotti. Carbohydr. Res., 68, C3-C7, (1979).

21. **Structure of urinary glycosaminoglycans. Chemical and ¹H-NMR characterization of heparan sulfates and dermatan sulfates from mucopolysaccharidoses type II, III, and VI.** M.E. Tira, A. Calatroni, C. Balduini, G. Torri, R. Moretti, B. Casu. Perspectives Inherited Metabolic Diseases, Ermes, Milan, 2, 1979, pp. 165-183.

20. **Structure and biological activity of heparin and other glycosaminoglycans.** B. Casu. Pharmacol Res Commun.11:1-18, (1979).

19 Correlation of sulfate content and degree of carboxylation of heparin and related glycosaminoglycans with anticomplement activity. Relationships to the anticoagulant and platelet-aggregating activities. E. Cofrancesco, F. Redaelli, E. Pogliani, N. Amici, G. Torri, B. Casu. *Thrombosis Res.* 14, 1, 179-187 (1979).

18. Studies on the conformation of heparin by ¹H and ¹³C NMR spectroscopy. G. Gatti, B. Casu, G.K. Hamer, A.S. Perlin. *Macromolecules.* 12, 1001-1007 (1979).

17. ¹H NMR spectra of glycosaminoglycan monomers and dimers in solution in dimethyl sulphoxide and water. F. Heatley, J.E. Scott, B. Casu. *Carbohydr. Res.*, 72, 13-23 (1979).

16. Methylated cycloamyloses (cyclodextrins) and their inclusion complexes. B. Casu, M. Reggiani, G.R. Sanderson. *Carbohydr. Res.*, 76, 59-66 (1979).

1978

15. Conformations of the major residues in heparin. ¹H-NMR spectroscopic studies. G. Gatti, B. Casu, A. S. Perlin. *Biochem Biophys Res Commun* 85, 14-20 (1978).

14. Infrared spectra of glycosaminoglycans in deuterium oxide and deuterium chloride solution: quantitative evaluation of uronic acid and acetamidodeoxyhexose moieties. B. Casu, G. Scovenna, A.J. Cifonelli, A.A. Perlin. *Carbohydr. Res.* 63, 13-27 (1978).

13. Infrared absorption and Raman scattering of sulfate groups of heparin and related glycosaminoglycans in aqueous solution. F. Cabassi, B. Casu, A.S. Perlin. *Carbohydr. Res.*, 63, 1-11 (1978).

1977 – 1965 (selection)

12. Struttura dei polisaccaridi di parete di alcuni lieviti del genere *Candida*. A. Bonucci, B. Casu, G. Torri, J. R. Vercellotti, F. Aragozzini. *Convegno specializzato sul genere "Candida", Società Italiana di Microbiologia*, 43-49, (1977).

11. Caratterizzazione mediante spettrometria NMR dei mannani parietali di lieviti del genere *Candida*. F. Aragozzini, C. Merendi, G. Torri, R. Craveri. *Convegno specializzato sul genere "Candida", Società Italiana di Microbiologia*, 235-242, (1977).

10. Structural studies on urinary glycosaminoglycans. Evidence of the D-configuration of the glucuronic acid residues in heparan sulfate. M. E. Tira, A. Calatroni, C. Balduini, R. Moretti, G. Torri, B. Casu. *Uppsala J. Med. Sci.* 82, 2, (1977).

9. Relationship between structure and biological activity of heparin. B. Casu, G. Torri, A. Amici, E. Cofrancesco, E. Pogliani, G. Gatti, A. S. Perlin. *Italian J. Biochem.* 26, 1, (1977).

8 A conductimetric method for the determination of sulfate and carboxyl groups in heparin and other mucopolysaccharides. B. Casu, U. Gennaro. *Carbohydr. Res.* 39, 168-76, (1975).

- 7 **Stereoselective effects of gadolinium ions on the relaxation properties of ^{13}C and ^1H nuclei of aldohexuronic acids and poly-glycosiduronic acids.** B. Casu, G. Gatti, N. Cyr, A.S. Perlin. Carbohydr. Res. 41, C6-C8 (1975).
6. **Methyl α - and β -D-idopyranosiduronic acids synthesis and conformational analysis.** A.S. Perlin, B. Casu, G.R. Sanderson, J. Tse. Carbohydr. Res. 21; 123-132 (1972).
5. **Conformation of acetylated cyclodextrins and amylose.** B. Casu, M. Reggiani, G.G. Gallo, A. Vigevani. Carbohydr. Res., 12, 157-170 (1970).
4. **Conformation of O-methylated amylose and cyclodextrins.** B. Casu, G.G. Gallo, M. Reggiani, A. Vigevani. Tetrahedron, 24, 803-821 (1968).
3. **Hydrogen bonding and conformation of glucose and polyglucoses in dimethylsulphoxide solution.** B. Casu, M. Reggiani, G.G. Gallo, A. Vigevani. Tetrahedron, 22, 3061-3083 (1966).
2. **NMR spectra and conformation of glucose and some related carbohydrates in dimethylsulphoxide solution.** B. Casu, M. Reggiani, G. Gallo, A. Vigevani. Tetrahedron Lett. 27, 2253-9, (1965).
- 1 **Infrared spectra of amylose and its oligomers.** B. Casu, M. Reggiani. J. Polymer Sci.(C), 7, 171-185 (1964).