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A05	53 (1980)	VOL. NO. (YEAR)		–	TABLES
A06	No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	9	FIGURES
A07	CCA – 1217	OTHER IDENTIFIC.			Orig.Sci.Paper

METHORICS OF THE PRECIPITATION PROCESSES. XXIV. FLOCCULATION PHENOMENA OF NON-IONIC SURFACE-ACTIVE AGENTS ON SILVER IODIDE SOLS

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DESCRIPTORS

An explanation concerning the mechanism of sensibilization, flocculation and stabilization action of non-ionic surface-active agents T-X-305 and T-X-705 on the negatively and positively charged silver iodide stable sols *in statu nascendi* was attempted by means of tyndallometric and microscopic investigations at 293, 313 and 333 K.

The flocculation process is explained as a stereospecific adsorption interaction of NSAA with colloid, in which the primary particles of AgI showing the crystalline structure, become coated and surrounded with NSAA molecules and micelles and form the aggregates of definite size during the stabilization and flocculation processes. The maximum aggregation degree is observed in the region of sensibilization and in the flocculation maximum. The particles are disaggregated during the stabilization process.

The discontinuities in $t_c - c_{in}$ curves show the different stability of each step in flocculation/deflocculation processes as a stereospecific phenomena and may be seen by comparing the corresponding phenomena followed by different measurements and calculations presented in Fig. 1.

The problem of flocculation is discussed according to the concepts of B. Težak (1) and V.K. La Mer (2).

Colloids

sols, silver iodide, interaction of with non-ionic surface-active agents,

Flocculation

action of non-ionic surface-active agents on,

Precipitation

phenomena of,

Silver iodide

stable sols of,

Surfactants

flocculation phenomena of on silver iodide sols,

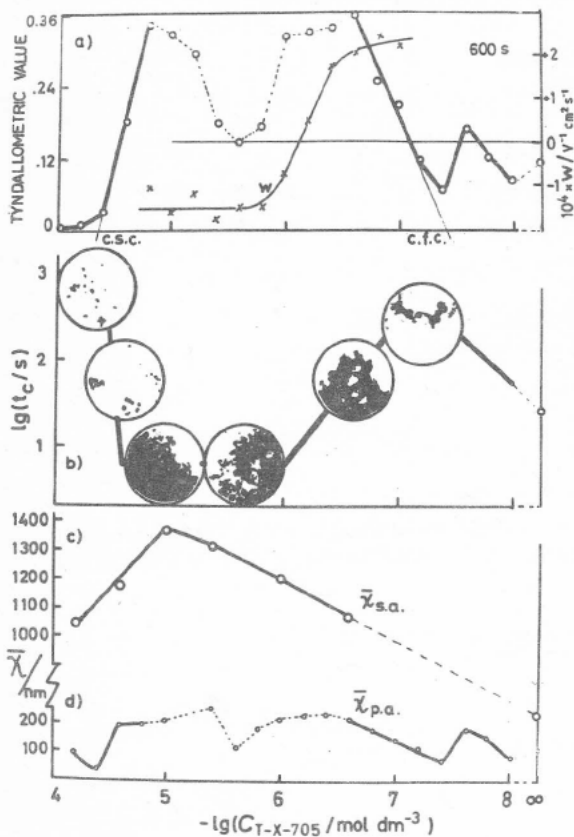


Fig. 1

Presentation of the precipitation processes in the flocculation maximum of positively charged AgI sol ($C_{\text{AgI}} = 1.0 \times 10^{-3} \text{ mol dm}^{-3}$, excess $C_{\text{AgNO}_3} = 1.0 \times 10^{-3} \text{ mol dm}^{-3}$):

a) by measuring tyndalometric values and electrophoretic mobility (ultramicroscopic electrophoresis);

b) by determination of critical times and presenting the aggregation processes in sensibilization, flocculation and stabilization region by light micrographs (total magnification 480 x), and by plotting the particle sizes versus concentration of T-X-705;

c) the sizes of secondary aggregates by counting particles in the field of light microscope, and

d) the sizes of primary aggregates calculated by DQ_T method describe the maximum corresponding to the tyndalometric maximum and t_c minimum.

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2. V. K. La Mer *Discuss. Faraday Soc.* 42 (1966) 248.

Abstractor: Đ. Težak

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Croatica Chemica Acta 53 (3) 413 – 418 (1980)

	Serial	LITERATURE TYPE	A20	413 – 418	PAGES
	Analytic	BIBLIOGR. LEVEL	A21	Dec. 10, 1979	RECEIPT DATE
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A02	CCACAA	CODEN	A24	Croat. Engl.	SUMMARY
A03	<i>Croat. Chem. Acta</i>	SHORT TITLE	A45	17	REFERENCES
A05	53 (1980)	VOL. NO. (YEAR)		2	TABLES
A06	No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	–	FIGURES
A07	CCA – 1218	OTHER IDENTIFIC.			Orig. Sci. Paper

SEMIEMPIRICAL STUDIES OF INNER-CORE ENERGY LEVELS. PART 7. ESCA SHIFTS OF GERMANIUM IN MOLECULAR SYSTEMS

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Organisch-Chemisches Institut der Universität, D-69 Heidelberg 1, BR Deutschland and *Theoretical Chemistry Group, 'Ruđer Bošković' Institute, P.O. Box 1016, 41001 Zagreb, Croatia, Yugoslavia

DESCRIPTORS

X-ray photoelectron spectroscopy shifts of the $3p_{3/2}$ energy levels of germanium in different chemical moieties were studied by using the semiempirical SCC-MO method. The calculations were performed within the framework of the electrostatic potential method by the point-charge approximation (1). Relaxation energies were explicitly taken into account by employing the equivalent core and transition potential methods (2). It was found out that the relaxation energy plays a decisive role in determining shifts along the series GeH_4 — $\text{Ge}(\text{CH}_3)_4$. The results obtained by the equivalent core and transition potential methods are similar being in the same time in good agreement with experiment. Performance of various semiempirical schemes in evaluating ESCA shifts is briefly discussed.

Molecular orbital
semiempirical SCC, of compounds containing germanium, photoelectron spectra in relation to,
Photoelectric emission
X-ray, of compounds containing germanium,

REFERENCES

1. Z. B. Maksić and R. Rupnik, *Croat. Chem. Acta* 50 (1977) 307.
2. O. Goscinski, G. G. Howat, and T. Abey, *J. Phys.* B 8 (1975) 11.

Abstractor: N. Trinajstić

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	Serial	LITERATURE TYPE	A20	419 – 424	PAGES
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A02	CCACAA	CODEN	A24	Croat. Engl.	SUMMARY LANG
A03	<i>Croat. Chem. Acta</i>	SHORT TITLE	A45	18	REFERENCES
A05	53 (1980)	VOL. NO. (YEAR)		2	TABLES
A06	No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	2	FIGURES
A07	CCA – 1219	OTHER IDENTIFIC.			Orig.Sci.Paper

THE INVESTIGATION OF THE STABILITY OF 2-OXOPROPANOATE COMPLEXES OF COBALT(II), NICKEL(II), COPPER(II), ZINC(II), CADMIUM(II), AND LEAD(II) IN AQUEOUS SOLUTIONS

R. Medančić, I. Kruhac, B. Mayer, and I. Filipović

Laboratory of Inorganic Chemistry, Faculty of Technology, University of Zagreb, 41001 Zagreb, Croatia, Yugoslavia

DESCRIPTORS

Formation constants and Stability constants
of metal 2-oxopropanoate complexes,

Potentiometry
metal complexes, stability constants determination,

Spectrometry
metal complexes, stability constants determination by,

Stability
of metal 2-oxopropanoate complexes,

Stability constants of 2-oxopropanoate complexes of Co^{+2} , Ni^{+2} , Cu^{+2} , Zn^{+2} , Cd^{+2} and Pb^{+2} were determined in aqueous solution at (298.2 ± 0.1) K and the ionic strength $I = 2 \text{ mol dm}^{-3}$ (adjusted with NaClO_4) by using two independent methods: spectrophotometry (1) and potentiometry with glass and quinhydrone electrodes (2,3). Ligand and metal-ion concentrations were $c_L \leq 100 \text{ mol m}^{-3}$, $c_M \leq 40 \text{ mol m}^{-3}$; the absorbancies were measured at 520 nm, 670 nm and 760 nm. The experimental data were evaluated by using a weighted non-linear least-squares algorithm (1,2) which yielded the refined values of cumulative stability constants defined as

$$\beta_n = \frac{[\text{ML}_n]}{[\text{M}][\text{L}]^n} \cdot (\text{mol dm}^{-3})^n \quad (1)$$

The agreement of β values obtained potentiometrically and spectrophotometrically was reasonably good as can be judged from the values displayed in Table I.

TABLE I

Stability Constants of 2-Oxopropanoate Complexes
 $I = 2 \text{ mol dm}^{-3}$ (NaClO_4)

Metal ion	Method ^{a)}	$\lg \beta_1$	$\lg \beta_2$
Co^{+2}	GE	0.60	0.44
	QE	0.61	0.59
	Sp.	0.71	1.31
Ni^{+2}	GE	0.73	0.81
	QE	0.72	0.83
	Sp.	0.82	0.83
Cu^{+2}	GE	1.35	2.05
	QE	1.41	2.03
	Sp.	1.39	
Zn^{+2}	GE	0.72	0.54
	QE	0.76	0.80
Cd^{+2}	GE	0.69	1.07
	QE	0.71	1.19
Pb^{+2}	GE	1.50	2.25
	QE	1.51	2.30

a) GE: glass electrode potentiometry, QE: quinhydrone electrode potentiometry, Sp.: spectrophotometry

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3. I. Kruhac, B. Grabarić, I. Filipović, and I. Piljac, *Croat.Chem.Acta* 48 (1976) 119.

Abstractor: VI. Simeon

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	Serial	◀ LITERATURE TYPE	A20 ▶	425 – 433	◀ PAGES
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A02 ▶	CCACAA	◀ CODEN	A24 ▶	Croat. Engl.	◀ SUMMARY
A03 ▶	<i>Croat. Chem. Acta</i>	◀ SHORT TITLE	A45 ▶	19	◀ REFERENCES
A05 ▶	53 (1980)	◀ VOL. NO. (YEAR)		6	◀ TABLES
A06 ▶	No. 3	◀ ISSUE NO.	◀ CAT. OF CONTRIBUTION		◀ FIGURES
A07 ▶	CCA – 1220	◀ OTHER IDENTIFIC.			◀ Orig.Sci.Paper
A08 ▶	THE INFLUENCE OF SODIUM AND IODIDE IONS ON THE TRANSFORMATION OF METAPHASIC SILVER IODIDE INTO THE CRYSTALLINE SILVER IODIDE				
A11 ▶	<i>B. Subotić</i>				
A14 ▶	'Ruder Bošković' Institute, P.O.Box 1016, 41001 Zagreb, Croatia, Yugoslavia				

DESCRIPTORS

Aging
of silver iodide,
Crystallization
of silver iodide,
Silver iodide
metastable, transformation of
into crystalline form,

The influence of concentration of constitutive (AgI, I⁻) and nonconstitutive (Na⁺) components on the kinetics and mechanism of the transformation of metaphasic silver iodide into crystalline silver iodide is studied. The metaphase fraction of silver iodide was determined as a function of the ageing time t_A . The second order kinetics of particle aggregation is assumed (1) and the following equation is used for interpretation of data:

$$1/(^*f_m - p) = c_o \cdot k_\pi \cdot t_A / (1 - b) + 1/(1 - b) \quad (1)$$

where *f_m is the fraction of metaphase, b is the fraction of metaphasic silver iodide in secondary particles, and k_π is the ratio between the number of primary particles at $t_A = 0$ and the molar concentration of silver iodide in the system (c_o), multiplied by second order rate constant of aggregation. The p value is a difference between b and a certain constant factor which depends on the sol concentration and on the exchange time, but is independent on the ageing time of the sol. Equation (1) is linear with respect to t_A and can be used for determination of b and k_π values from the experimental data.

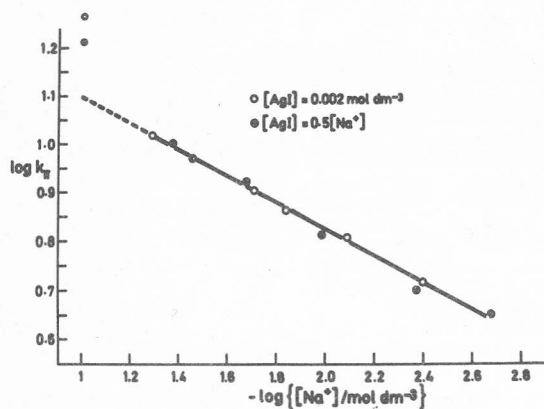


Fig. 1

The dependence of values of $\log k_{\pi}$ on the concentration (log scale) of Na^+ ions present in the liquid phase. The values marked by empty circles correspond to systems with constant concentration of silver iodide ($[AgI] = 0.002 \text{ mol dm}^{-3}$) and the values marked by full circles correspond to the systems with various AgI concentrations.

It is observed that k_{π} values within certain concentration range of constitutive components (as shown in the figure) is only affected by the concentration of Na^+ ions present in the system.

Abstractor: I. R u ž i ć

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A03 <i>Croat.Chem.Acta.</i>	SHORT TITLE	A45	5	REFERENCES
A05 53 (1980)	VOL. NO. (YEAR)		3	TABLES
A06 No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	2	FIGURES
A07 CCA – 1221	OTHER IDENTIFIC.			Orig.Sci.Paper
A08	THE CRYSTAL AND MOLECULAR STRUCTURE OF 3-(PYRIDYL-2')-IMIDAZO-[1,5-a] PYRIDINE			
A11	<i>L. Golič, I. Leban, B. Stanovnik, M. Tišler, and A. Tomažič</i>			
A14	Chemistry Department, E. Kardelj, University, P.O.B. 537, 61001 Ljubljana, Slovenia, Yugoslavia			

DESCRIPTORS

Crystal structure
of 3-(pyridyl-2')imidazo-
[1,5-a]pyridine,

In view of the continuing interest in the chemistry of azoloazines with bridgehead nitrogen, the crystal structure of 3-(pyridyl-2')-imidazo-[1,5-a]pyridine was determined from MoK α diffractometer data. The crystal data at 293(1) K are: C₁₂H₉N₃, M.W. 195.23, orthorhombic, P2₁2₁2₁, $a = 0.5107(1)$, $b = 1.3076(2)$, $c = 1.4343(3)$ nm, $V = 0.9579$ nm³, $D_m = 1.37(5)$ (by flotation), $D_x = 1.354$ Mg.m⁻³, $Z = 4$.

The structure was solved by direct methods (MULTAN 78) (1) and fully refined (SHELX 76) (2) to R and R_w values of 0.085 and 0.080 for 641 contributing reflexions. The crystal structure consists of discrete molecules. Most of the bond lengths and angles are within normal ranges for aromatic heterocyclic compounds (3). The interplanar angle between the mean planes through the pyridine and imidazo-pyridine parts of the molecule is 3.8°; therefore, the molecule as a whole is planar within 0.007 nm owing to two weak C-H...N interactions.

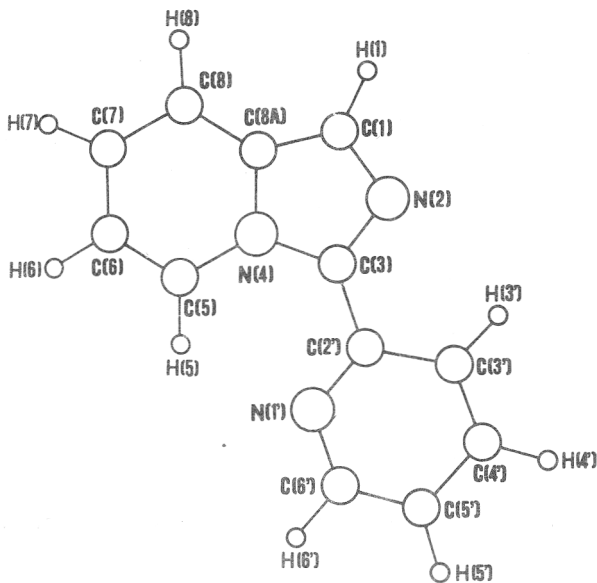


Fig. 1

A schematic view of the molecule with the atomic numbering.

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3. O. Kennard, D. G. Watson, F. H. Allen, N. W. Isaacs, W. D. S. Motherwell, R. C. Pettersen, and W. G. Town (Eds.), *Molecular Structures and Dimensions*, Vol. A1, N.V.A. Oosthoek's Uitgevers Mij, Utrecht 1972.

Abstractor: I. L e b a n

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A03	<i>Croat. Chem. Acta</i>	SHORT TITLE	A45	9	REFERENCES
A05	53 (1980)	VOL. NO. (YEAR)		1	TABLES
A06	No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	–	FIGURES
A07	CCA – 1222	OTHER IDENTIFIC.			Note
A08	AQUATION OF (DIMETHYL SULPHOXIDE)PENTAAMMINECOBALT(III) IN AQUEOUS CETYLTRIMETHYLAMMONIUM BROMIDE SOLUTIONS				
A11	<i>M. Glavaš and W. L. Reynolds</i> *				
A14	Faculty of Science, University of Sarajevo, 71000 Sarajevo, Bosnia and Herzegovina, Yugoslavia and *Chemistry Department, University of Minnesota, Minneapolis, Minnesota, U.S.A.				

DESCRIPTORS

The rate of aquation of $[\text{Co}(\text{NH}_3)_5(\text{DMSO})]\text{Br}_3$ was measured in solutions containing the surfactant cetyltrimethylammonium bromide (CTAB) over the concentration range $9.55 \times 10^{-4} \text{ mol dm}^{-3}$ to $0.450 \text{ mol dm}^{-3}$. This large change in CTAB concentration affected the rate very little and no significant amounts of $\text{Co}(\text{NH}_3)_5\text{Br}^{2+}$ were formed. On the basis of a comparison with the results of the aquation in pure solvents (1,2) (DMSO and water) it was concluded that, if Br^- counterions were concentrated in the microregions around the positively charged CTAB micelles then there was no corresponding increase in the formation of $\text{Co}(\text{NH}_3)_5(\text{DMSO})^{3+} \cdot \text{Br}^-$ ion-pairs in this region with subsequent $\text{Co}(\text{NH}_3)_5\text{Br}^{2+}$ formation.

Aquation

of (dimethyl sulfoxide)pentaamminecobalt(III),

Cobalt, compounds

complexes, rate of aquation of,

Surfactants

cetyltrimethylammonium bromide, in aquation of cobalt(III) complexes,

REFERENCES

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Abstractor: M. B i r u š

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Croatica Chemica Acta 53 (3) 445 – 447 (1980)

Serial	LITERATURE TYPE	A20	445 – 447	PAGES
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A02 CCACAA	CODEN	A24	Croat. Engl.	SUMMARY LANG
A03 <i>Croat.Chem.Acta</i>	SHORT TITLE	A45	13	REFERENCES
A05 53 (1980)	VOL. NO. (YEAR)		1	TABLES
A06 No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	–	FIGURES
A07 CCA – 1223	OTHER IDENTIFIC.			Prelim.Commun.

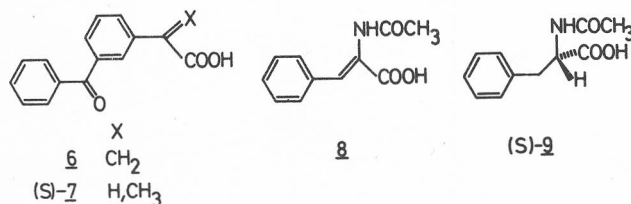
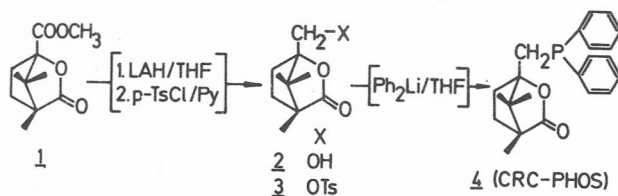
A CHIRAL PHOSPHINE (CRC-PHOS) DERIVED FROM (+)-CAMPHANIC ACID. A NEW LIGAND FOR HOMOGENEOUS ASYMMETRIC HYDROGENATION

G. Comisso, A. Segal, and V. Šunjić

CRC, Chemical Research Company, 33048 San Giovanni al Natisone (UD), Italy

DESCRIPTORS

Camphanic acid methyl ester (**1**) was reduced with LAH to **2**, which was tosylated in **3** (Scheme). Tosylate **3** was reacted with diphenylphosphine lithium in THF at -10 °C affording **4** (53.4 % after chromatography on silica with *n*-hexane/acetone 7:3).



(+) - Camphanic acid
chiral phosphine derived from,
Hydrogenation
asymmetric
of α-acetylamino cinnamic
acid,
of *m*-benzoyl-phenylpropionic
acid,
enantioselective, with a chiral
phosphine (CRC-PHOS),
Stereochemistry
of homogeneous hydrogenation
of chiral phosphine
complex,

Compound 4 (CRC PHOS) gave stable complex with Rh-norbornadiene perchlorate $(\text{Rh}(\text{NBD})_2\text{ClO}_4)$ as a deep-yellow crystalline powder, which presumably has the stoichiometry $\text{Rh}[(\text{CRC PHOS})_2(\text{NBD})_2]\text{ClO}_4$, and crystallizes with one molecule of THF. This is concluded from spectral and analytical data. The structure is in accord with the known crystal structures of some oxo-phosphines (2,3). In the presence of this catalytic complex asymmetric hydrogenation of α -acetylamino cinnamic acid, and *m*-benzoyl-phenylpropenic acid, as the model prochiral substrates, yielded corresponding *S*- α -substituted carboxylic acids in 3–15% enantiomeric excess (e.e.).

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Abstractor: V. Šunjić

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A02 CCAČAA	CODEN	A24	Croat. Engl.	SUMMARY
A03 <i>Croat. Chem. Acta</i>	SHORT TITLE	A45	8	REFERENCES
A05 53 (1980)	VOL. NO. (YEAR)		–	TABLES
A06 No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	–	FIGURES
A07 CCA – 1224	OTHER IDENTIFIC.			Orig.Sci.Paper
A08	A NEW APPROACH TO SEMISYNTHETIC PENICILLINS BY MIXED ANHYDRIDE METHOD			
A11	<i>V. Škarić and V. Turjak-Zebić</i>			
A14	Laboratory of Stereochemistry and Natural Products, 'Ruđer Bošković' Institute, P.O.Box 1016, 41001 Zagreb, Croatia, Yugoslavia			

DESCRIPTORS

An efficient aminoacylation of methyl 6-aminopenicillinate I by mixed high energy phosphate anhydrides is described.

N-Phthaloylglycyldibenzylphosphate anhydride was prepared from phthaloylglycyl chloride and the silver salt of dibenzylphosphate (1). Prepared anhydride was allowed to react with methyl 6-aminopenicillate in the presence of dicyclohexylcarbodiimide to give methyl ester of phthalimidomethylpenicillin (II). The ester II was purified by preparative TLC and the structure confirmed by spectroscopic methods.

Similarly, methyl ester of benzylpenicillin (III) was prepared using phenylacetyldibenzylphosphate as an acylating agent.

Acylation

of methyl 6-aminopenicillinate,

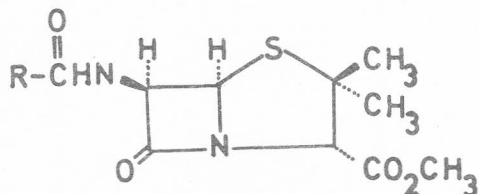
Antibiotics

semisynthetic penicillins, by mixed anhydride method,

Phosphoric acid

–, *N*-phthaloylglycyldibenzyl anhydride

application of as acylating agent, synthesis of,



(I) R = Ph_t-CH₂

(II) R = Ph-CH₂

REFERENCE

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Abstractor: M. V. Proštenik

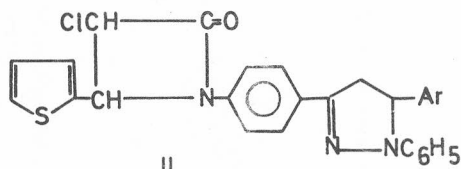
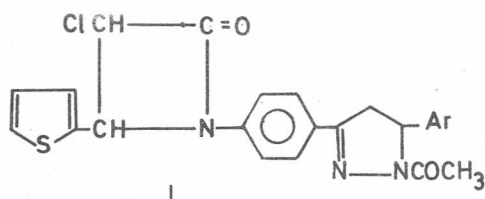
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Analytic	BIBLIOGR. LEVEL	A21	Dec. 5, 1979	RECEIPT DATE	
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A03	<i>Croat. Chem. Acta</i>	SHORT TITLE	A45	11	REFERENCES
A05	53 (1980)	VOL. NO. (YEAR)	4	TABLES	
A06	No. 3	ISSUE NO.	—	FIGURES	
A07	CCA – 1225	OTHER IDENTIFIC.	CAT. OF CONTRIBUTION		Orig.Sci.Paper
A08	SYNTHESIS OF SOME NEW THIENYLAZETIDINONES AND THIAZOLIDINONES CONTAINING PYRAZOLINES				
A11	<i>M. S. K. Youssef</i>				
A14	Chemistry Department, Faculty of Science, Assiut University, Assuit, Egypt				

DESCRIPTORS

The synthesis of new azetidinones I-II and thiazolidinones III-IV, containing a pyrazoline moiety in the *para* position to the phenyl ring, as potential schistosomidal agents are described.

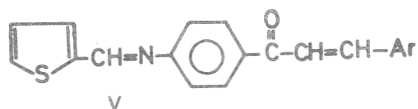
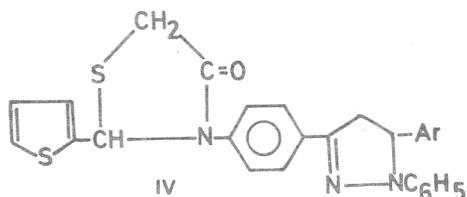
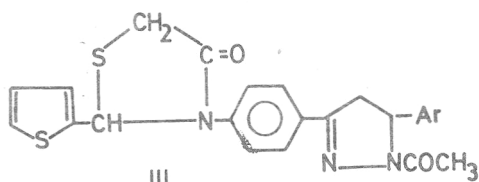


Azetidine

—, 2-one, derivatives
synthesis of,

Cyclocondensation reaction

of chalcones with hydrazine or
phenylhydrazines,



Thus thiophene-2-carboxaldehyde condensed with 4-aminoacetophenone in ethanol gave 4-(thienylideneamino)acetophenone (1). The latter reacts with aromatic aldehydes in the presence of piperidine or aqueous alkali yielding corresponding chalcones V.

Cyclocondensation of V with hydrazine or phenylhydrazines gave *N*-phenylpyrazoline derivatives. Reaction of pyrazolines with chloroacetylchloride or mercaptoacetic acid in dry dioxane furnish title compounds I- IV, respectively.

REFERENCE

1. M. Guia and E. Bagiena, *Gazz.Chem.Ital.* 51 II (1921) 116.

Abstractor: M. V. Proštenik

published in

Croatica Chemica Acta 53 (3) 461 – 464 (1980)

Serial	LITERATURE TYPE	A20	461 – 464	PAGES	
Analytic	BIBLIOGR. LEVEL	A21	Nov. 5, 1979	RECEIPT DATE	
545.844	UDC	A22	November 1980	PUBLICAT. DATE	
A01	YU 0011-1643	ISSN	A23	English	TEXT
A02	CCACAA	CODEN	A24	Croat. Engl.	SUMMARY
A03	<i>Croat.Chem.Acta</i>	SHORT TITLE	A45	13	REFERENCES
A05	53 (1980)	VOL. NO. (YEAR)		1	TABLES
A06	No. 3	ISSUE NO.	CAT. OF CONTRIBUTION		FIGURES
A07	CCA – 1226	OTHER IDENTIFIC.			Orig. Sci. Paper

QUALITATIVE AND QUANTITATIVE ASPECTS OF USING ECHTBLAUSALZ B TO VISUALIZE 4-HYDROXYCOUMARIN AND SOME OF ITS BIOLOGICALLY ACTIVE DERIVATIVES ON THIN-LAYER CHROMATOGRAMS

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DESCRIPTORS

Chromatography, thin-layer
in separation of 4-hydroxy-
coumarin derivatives,

Coumarins

–, 4-hydroxy, derivatives of
separation of by tlc,
visualization of by Echtblau-
salz B,

It has been reported previously (1) that several coumarin derivatives can be sharply separated by thin-layer chromatography on silica gel, and detected on chromatograms by exciting their fluorescence. This procedure has been thereafter successfully used with the parent 4-hydroxycoumarin and its 7-hydroxylated derivative, with anticoagulant drugs belonging to the 4-hydroxycoumarin series (dicumarol, Tromexan^R, warfarin), and with two agents producing multiple biological effects – fungicidal, insecticidal, rodenticidal –, 3-(ω -bromoacetyl)-4-hydroxycoumarin and its 7-brominated derivative (2).

Meanwhile the original procedure has been modified by introducing a different mode of visualization. Instead of exciting fluorescence visible colorations are produced by reacting the chromatographically separated coumarin derivatives, *in situ*, with Echtblausalz B (EBB), a double salt containing 4,4'-bis(diazonium)-3,3'-dimethoxybiphenyl dichloride and ZnCl₂.

The modified procedure offers the following advantages: The use of Echtblausalz B distinctly lowers the minimum detectable mass, thereby increasing the detection sensitivities. The only exception has been noticed in the case of 3-(ω -bromoacetyl)-7-bromo-4-hydroxycoumarin. The compounds tested produce

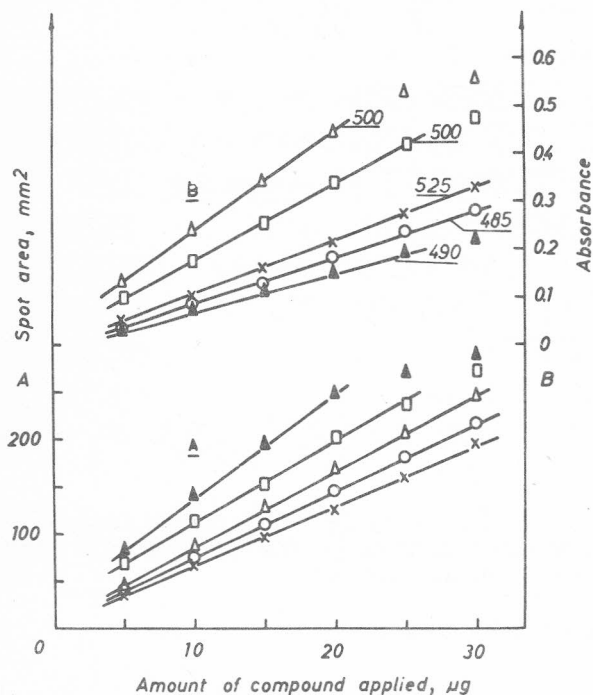


Fig. 1

Quantitative evaluation of TL chromatograms prepared with some 4-hydroxycoumarin derivatives on 0.50 mm silica gel plates and visualised with Echtblausaltz B. For a description of materials and procedures see legend of Table I. Increasing amounts of each compound were applied onto the baseline of the same plate and the front of developing solvent was allowed to ascend 15 cm above this line in all runs. Points on the graphs represent averages from three experiments: □, 4-hydroxycoumarin; Δ, warfarin 3-(3'-oxo-1'-phenylbutyl)-4-hydroxycoumarin; ○, dicumarol 3,3'-methylenebis(4-hydroxycoumarin); X, 3-(ω-bromoacetyl)-4-hydroxycoumarin; ▲, 4,7-dihydroxycoumarin. A, Spot area vs. amount applied. B, Absorbance of stain eluates (5 ml of eluent per spot: CHCl_3 for all compounds except 4,7-dihydroxycoumarin which was eluted with acetone) vs. amount applied; measurements were made at the wavelengths of maximum absorbance as indicated in the graph.

different nuances of blue which can be distinguished at a glance enabling thus a fast identification by comparison with colour standards. Quantitative evaluations of the spot area or absorbance measurements after eluting the stains result linearity ranges extending to 30 μg except for 4-hydroxy- and 4,7-dihydroxycoumarin for which linearities do not exceed 20 μg of applied compound.

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Abstractor: Z. Štefanac

published in

Croatica Chemica Acta 53 (3) 465 – 469 (1980)

Serial	LITERATURE TYPE	A20	465 – 469	PAGES
Analytic	BIBLIOGR. LEVEL	A21	Jan. 21, 1980	RECEIPT DATE
546.72:546.56	UDC	A22	November 1980	PUBLICAT. DATE
A01 YU 0011–1643	ISSN	A23	English	TEXT LANG
A02 CCACAA	CODEN	A24	Croat. Engl.	SUMMARY LANG
A03 <i>Croat.Chem.Acta</i>	SHORT TITLE	A45	19	REFERENCES
A05 53 (1980)	VOL. NO. (YEAR)		–	TABLES
A06 No. 3	ISSUE NO.	CAT OF CONTRIBUTION	–	FIGURES
A07 CCA – 1227	OTHER IDENTIFIC.			Orig.Sci.Paper
A08	GRAVIMETRIC SEPARATION AND ESTIMATION OF COBALT AND COPPER USING <i>N-p</i>-CHLOROPHENYLCINNAMOHYDROXAMIC ACID			
A11	<i>K. R. Paul and V. K. Gupta</i>			
A14	Department of Chemistry, Ravishankar University, Raipur 492010, India			

DESCRIPTORS

N-Phenylbenzohydroxamic acid has been reported as a reagent for gravimetric determination of cobalt and copper (1). It has been found that the introduction of electrophilic substituents, like chlorine on *N*-phenyl ring of the hydroxamic acid decreases the stability of metal complexes (2) and consequently increases the selectivity of the reagent.

In this paper *N-p*-chlorophenylcinnamohydroxamic acid (*p*-CPCHA) was used as a reagent for gravimetric determination of cobalt and copper. The *p*-CPCHA forms with cobalt and copper a directly weighable complexes having definite composition $(C_{15}H_{11}NO_2Cl)_2M$, $M = Co$ or Cu . The composition of the complexes was determined by elemental analysis and by IR spectra. The melting points of the cobalt and copper *p*-CPCHA complexes are 180 °C and 215 °C, respectively. The optimum pH range for complete precipitation of cobalt and copper was found to be between 5.4 – 6.0 and 3.4 – 3.8, respectively.

The *p*-CPCHA is comparable to other recommended reagents.

Cobalt
gravimetric determination
of,
Copper
gravimetric determination
of,

The other advantages of *p*-CPCHA as the reagent for separation and determination of cobalt and copper are high molecular weight, low conversion factors and higher selectivity.

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Abstractor: B. Grabarić

published in

Croatica Chemica Acta 53 (3) 471 - 475 (1980)

Serial	LITERATURE TYPE	A20	471 - 475	PAGES
Analytic	BIBLIOGR. LEVEL	A21	June 4, 1979	RECEIPT DATE
543.7:546.655	UDC	A22	November 1980	PUBLICAT. DATE
A01 YU 0011-1643	ISSN	A23	English	TEXT LANG
A02 CCACAA	CODEN	A24	Croat. Engl.	SUMMARY LANG
A03 <i>Croat. Chem. Acta</i>	SHORT TITLE	A45	15	REFERENCES
A05 53 (1980)	VOL. NO. (YEAR)		2	TABLES
A06 No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	-	FIGURES
A07 <i>CCA</i> -1228	OTHER IDENTIFIC.			Orig.Sci.Paper

p-CHLORO SUBSTITUTED CINNAMOHYDROXAMIC ACIDS AS ANALYTICAL REAGENTS FOR CERIUM. SPECTROPHOTOMETRIC DETERMINATION WITH N-PHENYL-p-CHLOROCINNAMOHYDROXAMIC ACID

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Analytical Laboratories, Pharmacy Department, Faculty of Technology and Engineering, M. S. University of Baroda, Kalabhavan, Baroda 39001, India

DESCRIPTORS

Cerium(IV)

spectrophotometric determination of,

Spectrochemical analysis

spectrophotometric, determination of cerium,

N-Phenyl-*p*-chlorocinnamohydroxamic acid (L) forms a redish-brown complex with Ce(IV) ($\lambda_{max.} = 470 \text{ nm}$ at $\text{pH} = 9.0$). The composition of the complex was found to be ML_4 ; it is easily extractable with chloroform (extraction time: $(2 \cdot \cdot \cdot 3) \text{ min}$) and its colour is very stable ($\geq 10 \text{ d}$). Beer's law for the extracted complex is valid in the range $0.2 \cdot \cdot \cdot 30 \text{ ppm}$ of Ce. Most of metals and the most common anions do not interfere with the Ce determination in a $20 \mu\text{g}/25 \text{ cm}^3$ solution, provided the following limits are not exceeded: 100 mg (Ag^+ , Be^{+2} , Mg^{+2} , Ca^{+2} , Sr^{+2} , Cu^{+2} , Cd^{+2} , Zn^{+2} , Ni^{+2} , Pb^{+2} , Co^{+2} , Ba^{+2} , Hg^{+2} , Mn^{+2} , Sb^{+3} , Fe^{+3}); 80 mg (Ta(V) , Nb(V) , La^{+3} and lanthanides, As(III) , In(III) , Cr^{+3} , Th(IV) , NO_2^- , F^- , Cl^- , Br^- , I^- , SO_4^{2-}); 60 mg (Ga(III) , UO_2^{+2}); 40 mg (Mo(VI) , PO_4^{3-}); 30 mg (Ti(IV) , Zr(IV) , V(V)).

Analytical procedure: Put 2 cm^3 of 0.2% reagent solution (in ethanol) + 6 cm^3 of buffer solution ($\text{pH} = 9$) and 10 cm^3 of CHCl_3 ; add 2 cm^3 of cerium containing solution, shake vigorously for $(5 \cdot \cdot \cdot 10) \text{ min}$ and allow the two layers to separate. Dry the organic phase with anhydrous Na_2SO_4 . Repeat the extraction with 1 cm^3 of reagent solution and wash the used Na_2SO_4 with CHCl_3 . Combine all the extracts and make up to 25 cm^3 . Measure the absorbance at 470 nm against the reagent blank.

Abstractor: VI. S i m e o n

published in

Croatica Chemica Acta 53 (3) 477 - 483 (1980)

Serial	LITERATURE TYPE	A20	477 - 483	PAGES	
Analytic	BIBLIOGR. LEVEL	A21	Feb. 4, 1980	RECEIPT DATE	
541.135	UDC	A22	November 1980	PUBLICAT. DATE	
A01	YU 0011-1643	ISSN	A23	English	TEXT LANG
A02	CCACAA	CODEN	A24	Croat. Engl.	SUMMARY LANG
A03	<i>Croat.Chem.Acta</i>	SHORT TITLE	A45	8	REFERENCES
A05	53 (1980)	VOL. NO. (YEAR)	1	TABLES	
A06	No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	2	FIGURES
A07	CCA - 1229	OTHER IDENTIFIC			Orig.Sci.Paper

A08 **APPLICATION OF ANODIC STRIPPING VOLTAMMETRY FOR TRACE METAL SPECIATION. II. DIGITAL SIMULATION OF NEOPOLAROGRAPH AT THE HANGING MERCURY DROP ELECTRODE**

A11 *M. Lovrić and M. Branica*

A14 Center for Marine Research, 'Ruđer Bošković' Institute, P.O. Box 1016, 41001 Zagreb, Croatia, Yugoslavia

DESCRIPTORS

An introduction to the theoretical and practical characteristics as well as the development of neopolarography is described. This new, modified anodic stripping voltammetry (ASV) method is very convenient for the determination of the ionic form of some metal ions at very low concentrations and meets concentration levels in natural waters (1).

The digital simulation program of neopolarography is given and the experimental results for the neopolarogram at the hanging mercury drop electrode (HMDE) are discussed. Because of high reproducibility of its electroactive surface and hydrodynamic characteristics of the cell, it is a very reliable indicator electrode for neopolarography. If each ASV cycle is performed on a new drop, a well developed neopolarogram is recorded. A limitation of HMDE is its relatively low sensitivity which for neopolarograms (even in stirred solutions) does not exceed 10^{-8} (Mdm⁻³) of the depolarizer. In natural waters concentrations of many trace metal ions are below this concentration limit and therefore this method can not be used for direct neopolarographic measurements. However, in polluted waters these concentrations are higher and the HMDE can thus be applied for direct neopolarographic measurements.

Electrodes

hanging-drop, mercury
digital simulation of neopolarograms at,
as indicator electrode for neopolarography,

Polarography

neo-, theoretical and practical characteristics of,

Trace elements

determination of by anodic stripping voltammetry,

Voltammetry

anodic stripping, in determination of trace metals,

REFERENCE

1. M. Branica D. M. Novak, and S. Bubić *Croat.Chem.Acta*
49 (1977) 539.

Abstractor: M. Lovrić

published in

Croatica Chemica Acta 53 (3) 485 – 501 (1980)

Serial	LITERATURE TYPE	A20	485 – 501	PAGES	
Analytic	BIBLIOGR. LEVEL	A21	Feb. 4, 1980	RECEIPT	
541.135	UDC	A22	November 1980	PUBLICAT. DATE	
A01	YU 0011–1643	ISSN	A23	English	TEXT
A02	CCACAA	CODEN	A24	Croat. Engl.	SUMMARY
A03	<i>Croat. Chem. Acta</i>	SHORT TITLE	A45	13	REFERENCES
A05	53 (1980)	VOL. NO. (YEAR)		3	TABLES
A06	No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	10	FIGURES
A07	CCA – 1230	OTHER IDENTIFIC.			Orig.Sci.Paper
A08	APPLICATION OF ANODIC STRIPPING VOLTAMMETRY FOR TRACE METAL SPECIATION. III. SIMULATED AND EXPERIMENTAL NEOPOLAROGRAMS AT ROTATED DISK ELECTRODE				
A11	<i>M. Lovrić and M. Branica</i>				
A14	Center for Marine Research, 'Ruđer Bošković' Institute, P.O. Box 1016, 41001 Zagreb, Croatia, Yugoslavia				

DESCRIPTORS

Electrodes

rotating disk, simulation of neopolarograms at,

Polarography

neo-, in characterization of trace metals,

Trace elements

determination of by anodic stripping voltammetry,

Voltammetry

anodic stripping, in determination of trace metals,

Neopolarography is an electrochemical method which consists of several ASV cycles at successively varied potentials of preelectrolysis. The digital simulation procedure for neopolarograms at the rotated disk electrode is described and the properties of reversible and nonreversible neopolarograms are discussed. The theory of neopolarography at thin mercury film electrodes is developed. The resulting simulated curves are compared with the experimental neopolarograms of lead in a perchlorate medium. The theoretical predictions are in good agreement with the experimental and simulated results. The neopolarography is well defined analytical technique (1,2) which offers many possibilities for the physico-chemical characterization of trace metals at very low concentration levels. The rotating mercury coated glassy carbon electrode is very useful because of its high sensitivity, easy maintenance and fairly well reproducibility of the results (3).

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2. M. S. Shuman and J. L. Cromer, *Anal. Chem.* 51 (1979) 1546.
3. M. Florence *J. Electroanal. Chem.* 27 (1970) 273.

Abstractor: M. Lovrić

published in

Croatia Chemica Acta 53 (3) 503 – 508 (1980)

Serial	LITERATURE TYPE	A20	503 – 508	PAGES
Analytic	BIBLIOGR. LEVEL	A21	Feb. 4, 1980	RECEIPT DATE
541.135	UDC	A22	November 1980	PUBLICAT. DATE
A01 YU 0011–1643	ISSN	A23	English	TEXT LANG
A02 CCACAA	CODEN	A24	Croat. Engl.	SUMMARY LANG
A03 <i>Croat. Chem. Acta</i>	SHORT TITLE	A45	23	REFERENCES
A05 53 (1980)	VOL. NO. (YEAR)		2	TABLES
A06 No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	1	FIGURES
A07 CCA – 1231	OTHER IDENTIFIC.			Orig.Sci.Paper

APPLICATION OF ANODIC STRIPPING VOLTAMMETRY FOR TRACE METAL SPECIATION. IV. DETERMINATION OF LEAD-CHLORIDE STABILITY CONSTANTS BY ROTATING MERCURY-COATED GLASSY CARBON ELECTRODE

M. Lovrić and M. Branica

Center for Marine Research, 'Ruđer Bošković' Institute, P.O. Box 1016, 41001 Zagreb, Croatia, Yugoslavia

DESCRIPTORS

The stability constants of lead-chloride complexes are determined by the neopolarographic method at the rotating mercury coated glassy carbon electrode (RMCGCE). The experiments were performed using the following $Pb^{2+}-Cl^{-}$ system:



$$1) \text{ pH} = 2; I_c = 0.7 \text{ mol dm}^{-3}$$

$$1 \times 10^{-4} \leq [NaCl]/\text{mol dm}^{-3} \leq 0.7 \text{ mol dm}^{-3}$$

$$2) \text{ pH} = 2; I_c = 3.0 \text{ mol dm}^{-3}$$

$$1 \times 10^{-3} \leq [NaCl]/\text{mol dm}^{-3} \leq 3.0 \text{ mol dm}^{-3}$$

In all solutions the concentrations of $HgCl_2$ and Pb^{2+} were $2 \times 10^{-5} \text{ mol dm}^{-3}$ and $2 \times 10^{-8} \text{ mol dm}^{-3}$, respectively. Additional experiments were performed with natural sea water acidified to $\text{pH} = 2$.

Electrodes

rotating, glassy-carbon, mercury-coated, for lead chloride complexes determination,

Formation constants and Stability constants

of lead chloride complexes, determination of by neopolarography,

Polarography

neo-, in lead determination,

Trace elements

determination of by anodic stripping voltammetry,

Voltammetry

anodic stripping, in determination of trace metals,

The apparent stability constants were:

$$K_1 = 4.9 \quad K_2 = 2.5 \quad K_3 = 0.45 \quad (I_c = 0.7 \text{ mol dm}^{-3})$$

$$K_1 = 4.1 \quad K_2 = 4.3 \quad K_3 = 2.9 \quad (I_c = 3.0 \text{ mol dm}^{-3})$$

The results obtained are in agreement with data in the literature (1).

REFERENCE

1. M. Branica, D. M. Novak, and S. Bubić, *Croat.Chem.Acta* 49 (1977) 539.

Abstractor: M. Lovrić

published in

Croatica Chemica Acta 53 (3) 509 – 517 (1980)

Serial	LITERATURE TYPE	A20	509 – 517	PAGES
Analytic	BIBLIOGR. LEVEL	A21	Feb. 26, 1980	RECEIPT
577.15	UDC	A22	November 1980	PUBLICAT. DATE
A01 YU 0011-1643	ISSN	A23	English	TEXT
A02 CCACAA	CODEN	A24	Slov. Engl.	SUMMARY LANG
A03 <i>Croat. Chem. Acta</i>	SHORT TITLE	A46	30	REFERENCES
A05 53 (1980)	VOL. NO. (YEAR)		4	TABLES
A06 No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	2	FIGURES
A07 CCA – 1232	OTHER IDENTIFIC.			Orig.Sci.Paper

SOME CHARACTERISTICS OF CATHEPSIN B AND α -N-BENZOYLARGININE- β -NAPHTHYLAMIDE HYDROLASE FROM BOVINE LYMPH NODES

T. Zvonar-Popovič, T. Lah, I. Kregar, and V. Turk

Department of Biochemistry, 'Jožef Štefan' Institute, 61000 Ljubljana, Slovenia, Yugoslavia

DESCRIPTORS

Cathepsin B

from bovine lymph nodes,
properties of,

Hydrolase

–, α -N-benzoylarginine- β -
naphthylamide
from bovine lymph nodes
properties of,
similarity of to cathepsin H,

Cathepsin B and α -N-benzoylarginine- β -naphthylamide (BANA) hydrolase were isolated from bovine lymph nodes by covalent chromatography (1), and several properties of these preparations were studied. Isoelectric focusing showed a strong band with $pI = 5.0$ to 5.1 for cathepsin B, and two equally strong bands with $pI = 7.1$ and 7.35 for BANA hydrolase. Amino acid compositions of both enzymes were determined. From CD spectra in the far UV region, the percentages of α -helix and β -structure were estimated by the method of Chen *et al.* (2); the respective values were 12 and 31% for cathepsin B, and only 18 and 12% for BANA hydrolase. Both enzymes were maximally stable at $pH = 6$; this was also the pH optimum for hydrolysis of BANA by both enzymes. For the degradation of hemoglobin, pH optima were 4.0 for cathepsin B and 6.5 to 7.0 for BANA hydrolase. Only the latter enzyme, but not cathepsin B, could use leucine-2-naphthylamide as a substrate. Both enzymes were inhibited by 4-chloromercurybenzoate, iodoacetic acid, and iodoacetamide, in accordance with their classification as thiol proteinases. Leupeptin at 10^{-6} mol dm^{-3} inhibited cathepsin B, but not the BANA hydrolase. It was concluded that BANA hydrolase is similar or even identical to cathepsin B from rat liver lysosomes (3).

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2. Y. H. Chen, J. T. Yang, and K. H. Chan, *Biochemistry* 13 (1974) 3350.
3. F. Kirschke, J. Langner, B. Wiederanders, S. An-sorge, P. Bohley, and H. Hanson, *Acta Biol.Med.German.* 36 (1977) 185.

Abstractor: Ž. Kućan

published in

Croatica Chemica Acta 53 (3) 519 – 524 (1980)

Serial	LITERATURE TYPE	A20	519 – 524	PAGES	
Analytic	BIBLIOGR. LEVEL	A21	March 3, 1980	RECEIPT	
547.96	UDC	A22	November 1980	PUBLICAT. DATE	
A01	YU 0011-1643	ISSN	A23	English	TEXT
A02	CCACAA	CODEN	A24	Croat. Engl.	SUMMARY LANG
A03	<i>Croat.Chem.Acta</i>	SHORT TITLE	A45	13	REFERENCES
A05	53 (1980)	VOL. NO. (YEAR)		1	TABLES
A06	No. 3	ISSUE NO.	CAT. OF CONTRIBUTION	2	FIGURES
A07	CCA – 1233	OTHER IDENTIFIC.			Orig.Sci.Paper

ERYTHROMYCIN SERIES. X. INHIBITORY ACTIVITY OF SEVERAL NEW ERYTHROMYCIN DERIVATIVES IN CELL-FREE AMINO ACID POLYMERIZATION SYSTEMS

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PLIVA, Pharmaceutical and Chemical Works, 41000 Zagreb, and 'Ruđer Bošković' Institute, P.O.Box 1016, 41001 Zagreb, Croatia, Yugoslavia

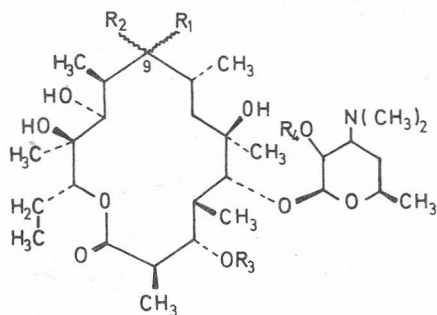
DESCRIPTORS

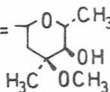
Erythromycin A (I), erythromycin A 9-oxime (II), 9(S)-erythromyclamine (V), and several new derivatives of these compounds (1), were examined for their ability to inhibit the polyadenylic acid-directed synthesis of polylysine and the polycytidylic acid-directed synthesis of polyproline, in cell-free amino acid polymerization systems from *Escherichia coli* (2).

All examined compounds showed similar activities in the two systems, though the concentrations needed to cause 50% inhibition varied from 0.5 to 1.5 $\mu\text{mol dm}^{-3}$. The following decreasing order of inhibitory activity was established: methylsuccinate of V (VI), I, V, II, methylsuccinate of II (III), *p*-toluenesulfonyl-V (VII), *p*-acetylamino-benzenesulfonyl-V (VIII), and ethylsuccinate of I (IV). The derivative of VII lacking cladinose (IX) showed lower but significant activity. Hence, none of the substitutions in the position 9 of the macrolide ring, present in these compounds, impairs the ability of I to bind the prokaryotic ribosome and inhibit its function, which is the basis for antibacterial activity of erythromycins.

Antibiotics

erythromycin derivatives
antibacterial activity of, substitution in macrolide ring in relation to,
inhibitory activity of, in amino acid polymerization systems,



I $R_1, R_2 = -O$, $R_3 =$ , $R_4 = -H$

II $R_1, R_2 = -N-OH$, $R_3 =$ cladinosyl, $R_4 = -H$


III $R_1, R_2 = -N-O-CO-(CH_2)_2-COOCH_3$, $R_3 =$ cladinosyl, $R_4 = -H$


IV $R_1, R_2 = -O$, $R_3 =$ cladinosyl, $R_4 = -CO-(CH_2)_2COOC_2H_5$

V $R_1 = -NH_2$, $R_2 = -H$, $R_3 =$ cladinosyl, $R_4 = -H$

VI $R_1 = -NH-CO-(CH_2)_2-COOCH_3$, $R_2 = -H$, $R_3 =$ cladinosyl, $R_4 = -H$

VII $R_1 = -NH-SO_2-$  $-CH_3$, $R_2 = -H$, $R_3 =$ cladinosyl, $R_4 = -H$

VIII $R_1 = -NH-SO_2-$  $-NH-CO-CH_3$, $R_2 = -H$, $R_3 =$ cladinosyl, $R_4 = -H$

IX $R_1 = -NH-SO_2-$  $-CH_3$, $R_2 = -H$, $R_3 = -H$, $R_4 = -H$

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