and analyzed for amino acids as described above. It is evident that in both peptides the C-terminal arginine had been split off. The penultimate valine had in addition been partly released from peptide A (Fig. 1, fraction II). Several more fractions were disclosed in the digest of peptide B. Fractions I and II were the N-terminal nona- and hepta-peptide, respectively, and fraction III consisted of phenylalanine, serine, and alanine. These results indicate that the carboxypeptidase B preparation used was contaminated with carboxypeptidase A.

The susceptibility of the fibrinopeptides towards thrombin was investigated in a final experiment. 5 μl of a human thrombin solution containing 20 NIH-units/ml were added to 45 μl of the above peptide solutions in one experiment and 5 μl of a thrombin solution containing 200 NIH-units/ml were added in another experiment. The specific activity of the thrombin was 46 NIH-units per mg.[7] After 4 and 24 h of incubation, the samples were submitted to paper electrophoresis at pH 4.1. No other fractions than those corresponding to the original peptides could be detected on the paper strips. Thus thrombin is probably not responsible for the degradation of fibrinopeptides by serum.

The present results show that fibrinopeptides are degraded in serum by what appears to be exopeptidases of at least two different kinds, *i.e.* carboxypeptidases and aminopeptidases. The fact that under our conditions peptide B but not peptide A is degraded from the C-terminal end, may be explained by the structural differences, which exist in the two peptides. Peptide A is in contrast to peptide B degraded from the N-terminal end. This difference in susceptibility is to be expected as peptide B but not peptide A has a blocked N-terminal amino group. The degradation of fibrinopeptide A to fibrinopeptide Y in serum strongly suggests that the presence of Y-chains in human fibrinogen [3] is due to enzymatic degradation of the fibrinogen in blood rather than to a genetically determined variant of fibrinogen. The perspective that a plasma protein like fibrinogen may be degraded *in vivo* raises the question whether other proteins can also be degraded in a similar fashion. This may be of great importance in discussions on the origin of some isoenzymes.

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K_2BaCl_4, another Case of Extreme Ionic Conductivity in a Solid

J. KROGH-MOE and M. VIKAN

Kjemisk Institutt, Norges Lærerhøgskole,

and

C. KROHN

Institutt for uorganisk kjemi, Norges tekniske høgskole, Trondheim, Norway

The phase diagram of the system KCl—$BaCl_2$ has been investigated by Gemsky,[1] Elchardus and Lafitte [2] and recently by Krohn.[3] In the system there is a congruently melting phase which appears around a composition of 33 mole % $BaCl_2$. (It is reasonable to believe that this solid phase has the composition K_2BaCl_4, at least at lower temperatures. Closely below the melting point it is possible that even non-stoichiometric ratios of KCl to $BaCl_2$ may occur, however). The phase is remarkable inasmuch as the corresponding liquidus line in the system is very flat. Several reasons for a flat liquidus line are conceivable, one being an extensive disorder in the solid. If this is the case, the transport properties of K_2BaCl_4 may show anomalies. Therefore an investigation of the electric conductivity of K_2BaCl_4 was undertaken.

Data on transport properties for compounds similar to K_2BaCl_4 appear in the

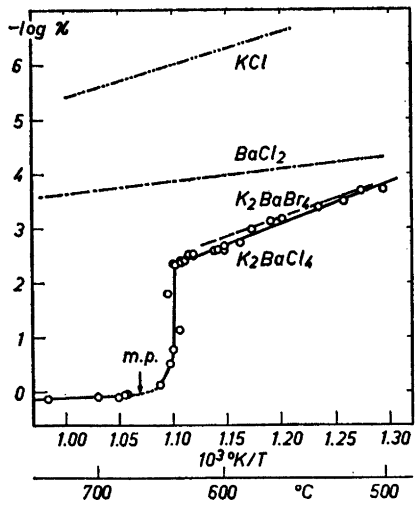

Fig. 1. The electric conductivity of K_2BaCl_4 (on a logarithmic scale) *versus* the reciprocal absolute temperature. Experimental points are indicated by circles. For comparison, corresponding literature values for KCl, $BaCl_2$ and K_2BaBr_4 are shown as dashed and dash-dotted lines. Arrow indicates the melting point of K_2BaCl_4.

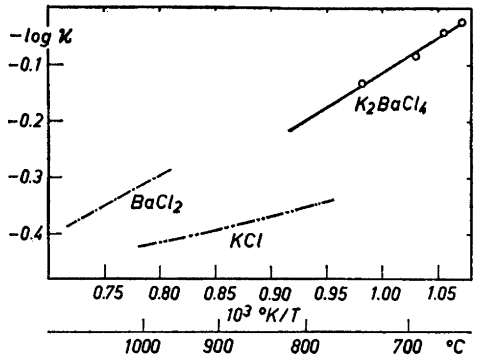

Fig. 2. The electric conductivity of liquid K_2BaCl_4 (on a logarithmic scale) *versus* the reciprocal absolute temperature. Corresponding literature values for KCl and $BaCl_2$ appear as dash-dotted lines.

literature. Jander [4] has studied diffusion and electric conduction in K_2BaBr_4, and arrives at the conclusion that this compound is mainly an anion conductor. Schmalzried [5] concludes that the compound K_2SrCl_4 also is an anion conductor, and that the ionic diffusivities below 500°C obey the condition:

$$D_{Cl^-} \gg D_{K^+} \gg D_{Sr^{2+}}$$

On this background the electric conductivity of solid, polycrystalline K_2BaCl_4 was measured. The results are given in Fig. 1, where the corresponding data for K_2BaBr_4 [4] and the parent salts $BaCl_2$ [6] and KCl [7] are presented.

For the sake of completeness, the conductivity of the molten compound also has been measured, and appears in Fig. 2 together with corresponding data for $BaCl_2$ [8] and KCl [9].

It appears from Fig. 1 that the conductivity of K_2BaCl_4 below 635°C is fairly close to that of K_2BaBr_4 [2], and obeys an Arrhenius equation:

$$\varkappa = \varkappa_0 \exp(-Q/RT)$$

where the best fit of $\varkappa_0$ and Q gives the following values:

$$\varkappa_0 = (1.62 \pm 0.22) \times 10^6\ \Omega^{-1}\,\mathrm{cm}^{-1}$$
$$Q = (35\,500 \pm 2400)\ \mathrm{cal\ mole}^{-1}$$

Around 635°C, however, there is an abrupt increase in conductivity, and it becomes of the same order of magnitude as the conductivity in the liquid state. This takes place well below the melting point, which is at 662°C.[3] The conductivity in this range of temperature appears to be comparable to that of another well known solid ionic conductor, namely α-AgI.

The sudden increase of conductivity at 635°C for K_2BaCl_4 remains for the moment unexplained. Differential thermal analysis shows no heat effect at this temperature. A second order transition would account for the failure to observe heat effects, however. Efforts to elucidate the nature of the transition will continue.

Experimental. Materials. The chemicals used in the measurements were commercial reagent grade barium chloride and potassium chloride (*pro analysi*, Merck AG, Darmstadt, Germany). The chemicals were dried *in vacuo* at 450°C for 12 h.

Apparatus and method. An AC method was used for the conductivity measurements, and the observed resistances were extrapolated to infinite frequency by the usual procedure introduced by Jones and Christian.[10] A Tinsley L.C.R.F. bridge, Type 4725, was used for the measurements. This was connected to a

Hewlett-Packard oscillator (range 0–20 KHz) and a Hewlett-Packard Type 130 oscilloscope as the zero indicator.

The conductivity cell consisted of a sintered alumina tube with 3 mm inner diameter. The electrodes were rings made of 0.8 mm Ø Pt wire spaced 30 mm apart. The current leads were 0.2 mm Ø Pt wire. Prior to each run the cell constant was determined by means of 0.1 N KCl solution, and values around 20 cm^{-1} were found. The compound salt was filled into a silica glass crucible and melted, whereupon the conductivity cell was lowered into place. The salts were kept melted in an atmosphere of purified argon for several hours, and then slowly cooled in the inert atmosphere. Measurements were performed both at increasing and decreasing temperature, and at each temperature by the following frequencies: 1, 2, 4, 8, and 12 HKz.

The error in the resistance measurements vary from 0.05 % in the low conductivity region to approximately 1 % in the region with high conductivity. Additional error, however, are introduced through the procedure for extrapolation to infinite frequency. This is estimated to some ± 5 % as an average.

The temperature was measured by means of a calibrated Pt/Pt10Rh thermocouple placed outside the crucible at equal distances from the two electrodes in the middle of the temperature-gradient free zone. The accuracy in the temperature measurements is better than ± 1°C.

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Chemical Constituents of the Genus *Dahlia*

II. The Isolation of two Aromatic Compounds: Naringenin Trimethylether and Fraxidin

FRANTZ KAUFMANN and JØRGEN LAM

Department of Chemistry, University of Aarhus, Aarhus, Denmark

During the past years we have investigated the light petroleum and ether extractives from species belonging to the genus *Dahlia* (Compositae) with special regard to the content of polyacetylenic compounds. Several times we have isolated non-acetylenic constituents from the lipophilic extracts. We now wish to report about two of these compounds.

One was isolated in an amount of 25 mg from the leaves and stems (182 g of fresh plant material) of *Dahlia lehmanni* Hieron. It was a colourless compound melting at 123.5–124.5° with an ultraviolet spectrum exhibiting maxima at 282 and 229 mμ (ε: 19 000 and 31 500). The infrared spectrum displayed a strong carbonyl band at 1670 cm^{-1} besides bands at 3050, 1610, 1575, and 1510 cm^{-1} (aromatic-type bands), 1250 and 1108 cm^{-1} (–C–O– bands). The infrared spectrum excluded OH. The Shinoda test [1a] was positive (pink). The data support the assumption that the compound could be a flavanone. The ultraviolet spectrum is in close accordance [1b] with that of naringenin (5,7,4′-trihydroxy-flavanone). Microanalytical data for the isolated compound agree with the formula for the trimethylether of naringenin, *i.e.* $C_{18}H_{18}O_5$ (Found: C 68.43; H 5.77. Calc. for $C_{18}H_{18}O_5$: C 68.78; H 5.77). Apparently this compound has never been isolated from any