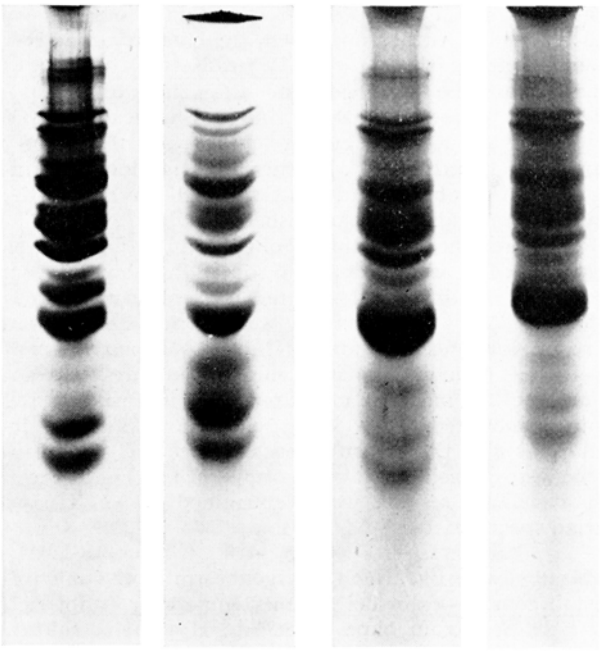

Muster der basischen Proteine von *A. arbuscula* nach 120 min Elektrophorese bei 4 mA/Trägergel; aufgebrachte Proteinmenge 80 µg/Trägergel. (A) Sporophyt, (a) vegetative Hyphen, (b) differenzierte Hyphen (mit Sporangien); (B) Gametophyt, (a) vegetative Hyphen, (b) differenzierte Hyphen (mit Gametangien).

ist zu schliessen, dass das oben beschriebene Bändermuster der basischen Proteine keine Histone enthält.

Unsere Resultate, die darauf hinweisen, dass Histone bei *A. arbuscula* nicht oder nur in Mengen < 5 µg/1000 mg Ausgangsmaterial vorhanden sind, sind bemerkenswert im Hinblick auf die Funktion der Histone als Repressoren der DNS-Transkription durch RNS-Polymerase[11]. Auch *Escherichia coli* besitzt keine Histone[12], und es wird angenommen, dass die Transkription auf andere Weise reprimiert wird. Bei *A. arbuscula* liegt möglicherweise ein ähnlicher Mechanismus vor[13].

Summary. Electrophoresis on acrylamide gel of basic proteins from the fungus *Allomyces arbuscula* (Butl.) yielded at least 16 bands. No differences were found between the banding-patterns of sporophyte and gametophyte. Extraction of histones from 1000 mg lyophilized mycelium and subsequent electrophoresis produced no bands. If histones are present at all, their concentration must be extremely low (< 5 µg/1000 mg material).

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The Effect of Heat-Treatment and UV-Irradiation on X-Ray Induced Electron Spin Resonance Centers in Valine

In a recent paper Shields et al.[1] were able to conclude from single-crystal data that the radical trapped in X-irradiated DL-valine at room temperature has the structure $(CH_3)_2\dot{C}CH(NH_3^+)COO^-$ (I). These investigations confirmed the earlier studies of other authors[2,3]. On the other hand, a recent paper of Box et al.[4] showed with single-crystals of the same substance that X-irradiation at 77 °K and warming up the sample to 225 °K leads to a definite spectrum which is attributed to the formation of the radical $(CH_3)_2CH\dot{C}HCOOH$ (II). Further warming up of the crystal to room temperature leads to the final stable free radical (I). The investigations with single crystals of X-irradiated valine at room temperature show in some orientations equal triplets resulting from a hyperfine interaction of the unpaired electron with the nitrogen nucleus of the amino group[1]. In the electron spin resonance spectrum of X-irradiated polycrystalline valine (see Figure *a*) this hyperfine structure is not resolved. It might be assumed that this is due to an anisotropic contribution of the coupling constant. Moreover Sommermeyer et al.[5] were able to show that an increasing X-ray dose leads to further decrease of the resolution of hyperfine pattern. Therefore, it was surprising to get a well resolved hyperfine structure after warming up the X-irradiated polycrystalline valine to 353 °K (see Figure *b*). In the middle part of the spectrum, the equal triplet resulting from the hyperfine interaction with the nitrogen is completely resolved and a coupling constant of 7.6 ± 0.4 G can be measured. This value is in good agreement with the contribution of the isotropic component[1,3]. Irradiation of valine with UV light of 254 nm following X-irradiation leads to a similar result. While, however, in the case of heat treatment the radical concentration is diminished to 85% only, the UV irradiation decreases the concentration to 32%.

If valine is irradiated with UV light for only 10 h, a concentration of less than 10^{16} radicals/g is obtained. This UV irradiation applied before X-irradiation does not influence the electron spin resonance spectra of the X-irradiated material. The same applies to heat-treatment of valine before X-irradiation. Therefore, it seems hardly

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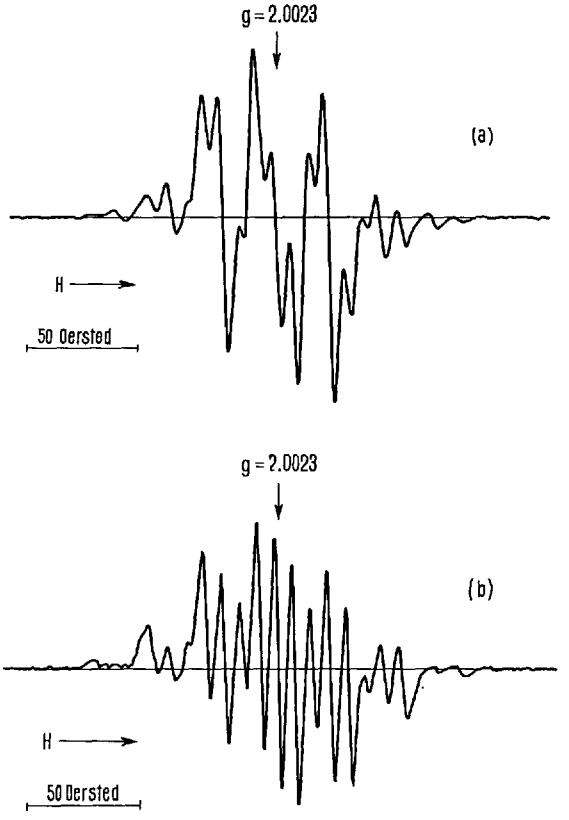
probable that changes in the crystal structure are responsible for the observed effect.

From the results obtained it may be concluded that the intermolecular radical transfer which was found by Box et al.[4] is not terminated by warming up the sample to room temperature. In this case a mixed spectrum is obtained at room temperature. A complete transfer of the unpaired electron from α- to β-position is obtained only if the temperature is further raised. On the contrary, we must assume that, in the case of UV irradiation, radicals of type (II) must be quenched faster than those of type (I). Quenching processes of X-ray induced radicals by UV irradiation are already known in the case of glycine[6], alanine[7] and methionine[8]. Further investigations pertaining to a different microwave saturation behaviour of the 2 types of radicals will be published elsewhere[9,10].



Electron spin resonance spectra of X-irradiated polycrystalline DL-valine at room temperature before (*a*) and after heat-treatment for 3 h at 353 °K (*b*).

Polycrystalline DL-valine (Schuchardt, Munich) was X-irradiated in air with a 50-kV source (half-value layer: 0.05 mm aluminium, dose-rate: 0.21 Mrad/min, dose 1 Mrad). The UV irradiation was carried out with a mercury low-pressure lamp NN 15/44 (Quarzlampengesellschaft Hanau, Germany) emitting mainly the resonance line 254 nm. The measured total intensity at the sample amounted to 3×10^4 erg cm^{-2} sec^{-1}. Both the irradiations and the measurements of electron spin resonance were carried out at room temperature. The electron spin resonance spectra were determined on an X-band Varian spectrometer.

Zusammenfassung. Nach Röntgenbestrahlung von polykristallinem DL-Valin bei Zimmertemperatur ergibt sich ein ESR-Spektrum ohne aufgelöste Hyperfeinstruktur. Erwärmt man die bestrahlte Substanz auf 353 °K, so zeigt das Spektrum mehrere gut aufgelöste Tripletts. Demnach ist die intermolekulare Radikalwanderung bei Zimmertemperatur noch nicht abgeschlossen, sondern erst nach weiterer Temperaturerhöhung.

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Some Enzymes Present in Marine Mollusca of the Canary Island of Lanzarote

In 1967, a marine biological expedition was organized to the Canary Island of Lanzarote. The main aim of the expedition was to study the benthic ecology of the island using SCUBA diving techniques. Part of the research was aimed at elucidating the feeding habits of the marine mollusca and, to help in this, an investigation was made of some of the digestive enzymes present in the species previously found to be common on the island[1]. Apparently no similar study had been made on most of the species involved[2]. The enzymes studied were: α-amylase, laminarinase, cellulase, acid phosphatase and acid esterase.

All extracts were made from live molluscs, none of which had been kept longer than overnight following collection from their natural habitat. The normal period between collection and extraction was 4–5 h. The molluscs were extracted in water by homogenization in a Potter-Elvehjem glass homogenizer. The small molluscs, *Tricolia pullus*, *Rissoa costulata*, *Bittium reticulatum* and *Cantharidus exasperatus* were homogenized in their shells. After homogenization by hand at room temperature for 15 min, insoluble materials were removed by centrifuging in an MSE bench centrifuge. The supernatant, of which the pH was in every case between 7 and 7.4, was decanted and used as the enzyme extract. Apart from *Conus betulinus* and *Aplysia ocellata*, of which single specimens were extracted, at least 5 specimens were used for each result. In the case of the very small molluscs, 50–100 specimens were used.

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