In the seeds it can partly be present in reduced form which is oxidized during the treatment of the plant material and isolation procedure

$HOOC-CH(NH_2)-CH_2-CH_2-CO-NH-CH(COOH)-CH_2-SH$
γ-L-glutamyl-L-cysteine

Peptide R X, γ-L-glutamyl-S-propyl-L-cysteine. This peptide was eluted from the Dowex 1 × 8 column partly in the same fractions as R IX (Fig. 1). They are poorly separated from each other also on the cellulose powder column and on the paper chromatogram. Peptide X was, however, isolated in pure form and its structure could be elucidated. It proved to be γ-L-glutamyl-S-propyl-L-cysteine. Because this peptide was earlier isolated in this laboratory [2] from garlic (*Allium sativum*) it is not treated in this preliminary communication.

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Facile Preparation of 2-Acetylcyclopentane-1,3-dione and 2-Acetylcyclohexane-1,3-dione

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2-Acetylcyclopentane-1,3-dione was needed for further spectroscopic investigations of hydrogen bonding in enolised β-tricarbonyl compounds [1-5]. A solid believed to be this compound was obtained by Sieglitz and Horn [6] in 0.2 % yield from succinyl chloride, vinyl acetate and aluminium chloride in an unsuccessful attempt to make cyclopentane-1,3-dione. The 2-acetylcyclopentane-1,3-dione was presumably formed in a secondary reaction. For the present purpose a corresponding diacylation of isopropenyl acetate seemed more promising.

We found that 2-acetylcyclopentane-1,3-dione can be obtained in *ca.* 45 % yield from succinyl chloride and isopropenyl acetate in 1,2-dichloroethane or 1,1,2,2-tetrachloroethane in the presence of aluminium chloride. Although preparatively useful, this reaction seemed to involve an excess of "acylating power". Stoichiometrically, the reaction between succinic anhydride and isopropenyl acetate should give the desired product and we have indeed found that this reaction gives up to 55 % 2-acetylcyclopentane-1,3-dione. The corresponding reaction with glutaric anhydride gives a 40 % yield of 2-acetylcyclohexane-1,3-dione, previously obtained in 25 % yield by *C*-acetylation of cyclohexane-1,3-dione [7].

In these reactions varying amounts of cyclopentane-1,3-dione and cyclohexane-1,3-dione, respectively, are formed. These compounds may also be obtained by hydrolysis of the corresponding triketones. This opens a new route to the otherwise rather inaccessible cyclopentane-1,3-diones (*cf.* Refs. [8-10]).

The present method for diacylation of isopropenyl acetate seems to be fairly general [11]. Some further applications will be described shortly.

Experimental. 2-Acetylcyclopentane-1,3-dione. Succinic anhydride (0.1 mole) and anhydrous aluminium chloride (0.2 mole) are suspended in 1,2-dichloroethane (100 ml). Isopropenyl acetate (0.1 mole) is added with stirring. The reaction brings the temperature to *ca.* 70°. The mixture is refluxed for 15 min., left to cool and is then poured into a mixture of dilute hydrochloric acid (250 ml, 2 M) and crushed ice (250 g). The organic phase is separated and shaken with dilute hydrochloric acid. The combined aqueous phases are extracted continuously with chloroform overnight. The combined dichloroethane and chloroform solutions are dried (sodium sulphate) and the solvents removed. The solid residue contains acetylcyclopentanedione, some cyclopentanedione, and succinic acid. The acetyl compound is isolated in *ca.* 50 % yield by repeated extractions with boiling light petroleum or by sublimation at 60° and 0.1 mm.

Recrystallisation from light petroleum (b.p. 40–60°) and sublimation gives the pure product, m.p. 73–74°. Lit. [6] m.p. 69–71°. (Found: C 59.5; H 5.9. Calc. for $C_7H_8O_3$: C 60.0; H 5.8.) The infrared spectrum (carbon tetrachloride) contains strong bands at 1710, 1635, and 1595 cm^{-1}. The ultraviolet spectrum (cyclohexane) shows maxima at 2650 Å (ε = 7040) and 2200 Å (ε = 11 800). 2-Acetylcyclopentane-1,3-dione dissolves readily in chloroform, water and alcohols but is less soluble in light petroleum or in ether. With copper(II) acetate it gives a greenish blue copper salt, which loses solvent at about 110° and melts with decomposition at 325°.

When heated with water or dilute acids acetylcyclopentanedione gives cyclopentane-1,3-dione in moderate to good yields. The sublimed product melts at 150–152° (lit. [8] m.p. 151.5–152.5°) and its infrared spectrum (KBr) is identical with that reported [8].

2-Acetylcyclohexane-1,3-dione. The corresponding reaction with glutaric anhydride in dichloromethane or 1,2-dichloroethane without the final refluxing gives a mixture from which 2-acetylcyclohexane-1,3-dione is conveniently isolated by distillation in 40 % yield, b.p. 63–68°, 0.1 mm. The melting point, 29–32°, and the infrared spectrum agree with those given by Smith [7]. Extraction of the distillation residue with boiling ethyl acetate and subsequent sublimation gives ca 10 % crude cyclohexane-1,3-dione, m.p. 98–102°.

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Correction to "Activation of Mitochondrial Propionyl-CoA Carboxylase" *

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In Table 11, last column, first line

for 932 *read* 632

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Corrections to "Inhibition of Photophosphorylation in Isolated Spinach Chloroplasts by Lower Aliphatic Straight-Chain Alcohols" *

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On p. S 309, fourth line from above
for 0.6 μmoles PMS *read* 0.06 μmoles PMS

On p. S 310, legend to Fig. 1
for Preincubation with 1 % (v/v) butanol *read* Preincubation with 0, 1, 2 and 5 % (v/v) butanol.

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