group of a five-membered ketone in conjugation with a double bond) [1]. The conjugation of the ketonic carbonyl with a double bond is also shown [2] by the characteristic absorption in the UV spectrum: λ_{max} (in ethanol) 219, 320 mμ (log ε 4.18; 1.70).

The properties of the substance obtained are similar to those given in the literature for the sesquiterpene lactone ambrosin.

With 2,4-dinitrophenylhydrazine in ethanol, we obtained ambrosin hydrazone with mp 87–89° C, confirming the presence of a keto group in the molecule.

When the substance was dissolved in aqueous alkalies, one mole of caustic soda was absorbed, which shows the presence in it of one saponifiable grouping, which may be a γ-lactone grouping [5]. The substance was brominated with $C_5H_5N \cdot HBr \cdot Br_2$ in chloroform. The crystalline bromination product had mp 142–144° C (from ether).

Oxidation of the substance with potassium permanganate in dry acetone yielded an acid with mp 128–130° C (from ether).

Hydrogenation of the substance in ethanol in the presence of palladized carbon formed a dihydro derivative $C_{15}H_{20}O_3$, mp 164–166° C (from ether), the IR spectrum of which did not have an absorption band at 1585 cm^{-1}. The UV spectrum exhibited the following maxima: 270 and 290 mμ (log ε 4.15 and 1.47), which are characteristic for a lactone carbonyl of a ketone group.

From what has been said it follows that the keto lactone obtained from the racemes of C. xanthifolia is identical with the sesquiterpene lactone ambrosin.

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INULICIN — A NEW SESQUITERPENE LACTONE FROM INULA JAPONICA

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From the epigeal part of Inula japonica Thunb family Compositae (Japan inula), collected on 22 August 1967 in the flowering phase, we have isolated a new sesquiterpene lactone—inulicin, $C_{17}H_{24}O_5$, with mp 125.5–126.5° C (from ethanol); $[\alpha]_D^{20}$ + 90.11° (c 4.69; chloroform).

The IR spectrum of the substance has absorption bands at 3502 cm^{-1} (OH) and 1745, 1660, and 1260 cm^{-1} (α-methylene-γ-lactone and $OCOCH_3$).

The NMR spectrum of inulicin has the signals of CH_3-CH- (doublet, 1.05 ppm, J = 7 Hz), $CH_3-C{=}C-$ (singlet, 1.75 ppm), and $OCOCH_3$ groups (singlet 2.04 ppm), a $CH_2{=}C$ group in conjugation with a lactone carbonyl (doublets at 6.28 ppm, J = 2.9 Hz, and at 5.73 ppm, J = 2.8 Hz), of a proton present in the geminal position to an OH group (doublet, 4.29 ppm, J = 2.5 Hz), and of a vinyl proton (multiplet, 5.05 ppm). In the 3.9–4.05 ppm region there is a signal which can be ascribed to a lactone proton and a proton present in the geminal position to $OCOCH_3$.

Inulicin forms an acetyl derivative $C_{19}H_{26}O_6$ with mp 83.5–85.5° C (from ethanol; ν_{max} 1760 and 1665 cm^{-1} (α-methylene-γ-lactone ring), 1270 and 1730, 1230 cm^{-1} ($OCOCH_3$ group).

When inulicin was hydrogenated in ethanol in the presence of a small amount of Pt catalyst (Adams), a dihydro derivative $C_{17}H_{26}O_5$ was obtained with mp 56–58.5° C (from petroleum ether); ν_{max} 3510 (OH), 1750–1740, and 1260 cm^{-1} (γ-lactone and $OCOCH_3$); the signals of the exocyclic $CH_2{=}C$ group had disappeared from the NMR spectrum and in its place there was a new signal of a CH_3 group attached to CH (doublet, 1.28 ppm, J = 7 Hz) while the signal of the vinyl proton remained (multiplet, 4.90 ppm).

Dihydroinulicin also forms an acetyl derivative $C_{19}H_{28}O_6$, with mp 69–71° C (from petroleum ether), ν_{max} 1770 (γ-lactone), 1740, and 1265–1245 cm^{-1} ($OCOCH_3$).

When inulicin was hydrogenated in glacial acetic acid over a Pt catalyst (Adams), 3 moles of hydrogen were consumed. The reaction product could not be crystallized. The study of the structure of inulicin is continuing.

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TRITERPENES IN PLANTS FROM THE SOVIET FAR EAST

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We have studied the triterpenes of several plants from the Soviet Far East. From the bark of *Alnus japonica* Sieb et Zucc. (Popov Oblast, Vladivostok region), we have isolated taraxerol and betulinic acid. In the bark of *Alnus maximowiczii* Call. (Dolinsk region, Sakhalin) we have detected taraxerol, alninkanone, and betulin. From the bark of *Betual daurica* Pall. (Vladivostok region) we have isolated betulin and oleanoic acid. In the roots of *Myrica tomentosa* (D.C.) Aschers et Graebn. (Dolinsk region, Sakhalin) we have detected myricadiol, taraxerol and taraxerone. In the leaves of this plant we found myricadiol. To identify all the compounds isolated, we obtained a number of derivatives by the usual method. All the substances investigated had melting points agreeing with those given in the literature. The compounds isolated and their derivatives gave no depressions of the melting points with authentic samples.

Substance	Mp, °C	
	Values found	Literature data
Taraxerol	279–280	282–285 [1]
Taraxerol acetate	300–304	303–305 [1]
Myricadiol	268.5	273–274 [1]
Myricadiol diacetate	248.5–250	256.5 [1]
Betulinic acid	306–307	320–324 [1]
Methyl betulinate	221.5–222.5	225–226 [1]
Betulin	252–254	261 [1]
Betulin diacetate	216–218	223 [1]
Alninkanone	168–172	172–172.5 [2]
Alninkanol acetate	258–259	261–262 [3]
Oleanoic acid	—	310 [1]
Acetate of methyl oleanolate	213–216	223 [4]
Taraxerone	236–240	245–249 [1]
Taraxerone 2,4-dinitrophenylhydrazone	258–269	257–258.5 [5]

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