Dieser neue Körper erwies sich leicht löslich in Alkohol, Äther, und Eisessig. Es löst sich in Alkalien mit roter Farbe. 1-Acetoxy-2-chlor-9. 10-anthrachinon stellt gelbe Nadeln (aus Eisessig) dar, Schmelzpunkt 176° – 179° .

11.20 mg.	Sbst :	26.20 mg.	CO ₂	2.80 mg.	H ₂ O
C ₁₄ H ₈ O ₄ Cl		Ber.	C	63.9 %	H 2.99 %
		Gef.	C	63.8 %	H 2.78 %

Umwandlung von 1-Oxy-2-chlor-9. 10-anthrachinon in Alizarin.

Der 1-Oxychlorkörper wird genau so behandelt wie oben sein Isomeres. Darauf entsteht Alizarin, Schmp. 289° .

5.55 mg.	Sbst :	14.15 mg.	CO ₂	1.40 mg.	H ₂ O
C ₁₄ H ₈ O ₄		Ber.	C	70.0 %	H 3.30 %
		Gef.	C	69.8 %	H 2.81 %

1. 2-Dioxy-9. 10-anthrachinon.

10g. o-Chlorphenol, 32g. Phtalsäureanhydrid, 20g. Borsäure und 160g. konz. Schwefelsäure werden auf 240° erhitzt, worauf starke Gasentwicklung beginnt. Nach 1 Stunde treibt man die Temperatur auf 255° , wobei man das Eintreten der Rotfärbung bemerkt, und erhält bei dieser Temperatur so lange bis die Gasentwicklung aufhört (ca. 30 Minuten); dann wird die erkaltete Mischung, ohne zu kühlen, in kaltes Wasser gegossen, die Flüssigkeit dekantiert und die voluminöse braune Fällung nochmals mit Wasser ausgekocht, um so die unveränderten Ausgangsmaterialien, abfiltriert und getrocknet. Hierauf wird der Farbstoff mit kochendem Alkohol in Lösung gebracht und daraus umkrystallisiert. Die Ausbeute beträgt 15 g.

16.21 mg.	Sbst :	41.30 mg.	CO ₂	4.45 mg.	H ₂ O
C ₁₄ H ₈ O ₄		Ber.	C	70.0 %	H 3.30 %
		Gef.	C	69.6 %	H 3.10 %

Rote, rhomische Nadeln vom Schmelzpunkt 289° . Es sublimiert in orangeroten Nadeln. Sehr charakteristisch ist die Färbung ihrer alkalischen Lösung, in konzentrierten Zustände ist dieselbe diese purpurrot; im auffallenden Licht rein blau, durch Verdünnen geht die Farbe in blauviolett über.

ON THE DETERMINATION OF THE COLLOIDAL SUBSTANCES IN ALCOHOLIC BEVERAGES WITH THE INTERFEROMETER.

By Teizo TAKAHASHI and Toshinobu ASAI.

(Received Jan. 18th., 1927.)

Formerly one of us (T. Takahashi) and Yoshinobu Omachi (Journ, of

the Agric. Chem. Soc. of Japan. Vol 1. No. 1.) reported that the colloidal substances in alcoholic beverages were determined by means of the Löwe's interferometer, with special reference to the analytical percentage of the actual colloidal substances present. Further investigations by the same instrument have been done with respect to the colloidal substances contained in "Moto" and "Moromi" the mash of "Saké."

First we ascertained the power of adsorption of the animal charcoal (Merck's animal charcoal, extra pure). As the substances to be adsorbed, such common colloidal substances, as dextrin and peptone and some non-colloidal substances, found always in the alcoholic beverages, were selected.

50c.c. of 0.1 % aqueous solution of each of these materials were added 0.5g. of animal charcoal, shaken for 30 minutes and filtered.

Of these filtrates "Colloidal Number" was found by the way as already stated. The results of the experiments were as follows :-

TABLE. No. 1.

Materials.	%(aqueous sol.)	"Drum Number."	"Colloidal Number."	
Dextrin. (Merck.)	0.10	100	93	(T. Takahashi and Y. Omachi ; Journ. of the Agric. Chem. Soc. of Japan. Vol. 1. No. 1.)
Maltose. (Kahlbaum.)	0.10	103	52	
Glucose. (Merck.)	0.10	104	15	
Peptone. (Witte.)	0.10	101	94	
Alcohol.	2.0	911	70	
Saccharose.	0.10	108	46	
Glycocoll.	0.10	121	2	
Glycerin.	0.79	602	22	
Succinic acid.	0.19	157	73	

As is seen from the table, dextrin and peptone were most adsorbable and maltose, glucose, saccharose and alcohol were so to some extents. (Especially with maltose such a high "Colloidal Number" as 52, was given, as about a half that of dextrin.) Glycerin, succinic acid and glycocoll were almost adsorbed.

From the results above given, not only the colloidal substances but also the non-colloidal substances were adsorbed in some measure, so the "Colloidal Number" which in accordance of an assumption, being absolutely concerned with the actual quantity of the colloids present in alcoholic beverages, were never been obtained so far as only this instrument gets the place. [One of

us (T. Takahashi) already proposed⁽²⁾ the application of the ultramicroscope to see whether the colloidal substances are completely adsorbed or not by the treatment. The details of these facts are to be reported before long.]

Nevertheless, we found out by this investigation a beneficial fact that the "Colloidal Number" is almost proportional to the actual amount of colloids in certain cases, at least, so in the case of "Moto" and "Moromi" of "Saké." The data are shown in the reference table (Table. No. 3).

For the determination of the colloidal substances contained in "Moto" and "Moromi" of "Saké" we selected ten periods. The dilution of the sample was respectively done according to the concentration of colloids present in each period.

In many cases they were diluted with ten times of its volume of distilled water and in another cases twenty times' dilution were taken. Animal charcoal, in various quantities, was added to 25c.c. of the diluted sample and conducted as above stated.

The "Colloidal Number" are almost equalized to hundred times of the number of grams of the actual colloids present in 100c.c. of the sample.

The following table shows the suitable quantities of animal charcoal for the determination of colloids in "Moto" and "Moromi" of "Saké", assuming dextrans and proteins were the main colloidal substances in the beverage.

TABLE. No. 2.

Stages of the sample taken.	"Futsumoto" No. 1. $\left\{ \begin{array}{l} \text{In "Moromi"} \\ \text{"Sokujo moto"} \\ \text{No. 1. were taken} \\ \text{in this place.} \end{array} \right.$				"Yamaoroshi haishi moto" No. 2.			
	Dilution.	Animal-charcoal (g. in 25c.c. of dil. sample.)	"Colloidal Number"	Protein + Dextrin (g. in 100c.c. of the sample.)	Dilution.	Animal-charcoal.	"Colloidal Number"	Protein + Dextrin.
Moto "Wakitsuki" (Beginning)	20	0.3	349	7.0796	20	0.2(?)	—	4.1616
"Moto wake" (Separation)	10	0.3	300	2.4280	10	0.3	326	3.3000
"Jyukusei" (Matured moto)	10	0.2	269	2.6172	10	0.2	267	2.5200
Before "Shiyo" (Main fermentation)	10	0.3	230	2.4132	10	0.2	252	2.3720
Moromi Before "Tome" [△]	20	0.2	196	4.1108	20	0.2	158	3.0765

(2) Journ. of the Agric. Chem. Soc. of Japan. 1925.

"Kuchiuchi"* (Main mash)	10	0.7	502	4.7307	10	0.8	541	5.7118
12 days after "Tome"	10	0.6	379	3.4687	10	0.7	452	4.5400
Before "Shiboriage" (Pressing)	10	0.3	248	2.3670	10	0.3	263	2.6246
Before "Hiire" (Pasteurisation)	10	0.1	129	1.1266	10	0.1	140	1.5588
After "Hiire"	10	0.1	127	1.2036	10	0.1	147	1.6352

△ "Tome" is the final process of the addition of the raw materials in the main fermentation.

* "Kuchiuchi" is a process of the mixing of "Moromi" mash.

The relation between the "Colloidal Numbers" and the "Drum Numbers" in the case of "Moto" and "Moromi" of "Saké" are shown in the following table :-

TABLE. No. 3.

Stage of the sample taken.	No.	Animal charcoal (g. in 25c.c. of the dil. sample)	"Drum Number"	"Colloidal Number"	"Drum Number" "Colloidal Number"	Alcohol + Sugar Dertrin + Protein
"Moto" wake (Separation of "Moto" mash)	{ F. 1.	0.3	1660	300	5.53	7.60
	{ Y. 2.	0.3	1663	326	5.10	4.98
"Jyukusei"	{ F. 1.	0.2	1506	299	5.59	6.28
	{ Y. 2.	0.2	1401	267	5.24	6.01
"Kuchiuchi"	{ S. 1.	0.7	1568	502	3.12	3.09
	{ Y. 2.	0.7	1558	501	3.10	2.26
12 days after "Tome"	{ S. 1.	0.7	1363	413	3.30	5.06
	{ Y. 2.	0.7	1437	452	3.17	3.87
Before "Shiboriage" (Pressing)	{ S. 1.	0.3	1238	248	4.99	7.74
	{ Y. 2.	0.3	1294	263	4.92	7.24
Before "Hiire"	{ S. 1.	0.05	1187	94	12.62	17.29
	{ Y. 2.	0.05	1298	122	10.63	12.82
After "Hiire"	{ S. 1.	0.1	1174	127	9.24	15.62
	{ Y. 2.	0.1	1279	147	8.70	11.83

F. 1. = "Futsumoto" No. 1.

Y. 2. = "Yamaoroshi haishi moto" No. 2.

S. 1. = "Sokujyo moto" No. 1.

Therefore, in comparison with the contents of the crystalloids such as sugars and alcohol, if the contents of the colloids were relatively larger the "Colloidal Numbers" were comparatively larger viz. there may not occur any error whatsoever caused by the adsorption of the crystalloids, and even in the reverse case the "Colloidal Numbers" show always proportional to the actual contents at least in Saké mash.

STUDIES ON ACIDS FORMED BY RHIZOPUS SPECIES.

Part III. The Formation of d-Gluconic Acid.

By Teizo TAKAHASHI and Kinichiro SAKAGUCHI.

(Received Dec. 9th., 1926.)

The occurrence of some kinds of organic acids, which are unextractive by ether, but whose lead salts are precipitable by alcohol (50–60%), in the culture medium grown with a certain species of *Rhizopus* was reported in the previous article.⁽¹⁾ To isolate and identify the acid, the lead salt yielded from about 10 liters of the medium, was treated by the current of SH_2 to set the acids. After a complete removal of excess of SH_2 , the acids were collected as calcium salts. The dry calcium salts were then treated by a small quantity of water, to get into the solution a part of these calcium salts.

To the solution thus obtained, an excess of alcohol (98%) was poured in and by this means there separated out a precipitate, which gave the characteristic colour reactions of lactic and gluconic acids.⁽²⁾

The precipitate was collected on a filter, washed several times with alcohol (98%) and at last with methyl alcohol, which dissolved very easily calcium lactate, leaving gluconate behind it. Thus we were able to isolate from the product all of the calcium gluconate, which was recrystallised from 30% alcohol in the characteristic needles.⁽³⁾ It was identified by its specific rotatory power and calcium contents as follows:—

Specific rotatory power.

Substance taken	0.3227 g.	Solvent : water.
$\alpha = + 0.37^\circ$	$l = 2$ d. m.	$t^\circ = 17^\circ\text{C.}$

$$[\alpha]_D^{17} = \frac{\alpha \times 100}{c \times l} = \frac{+0.37 \times 100}{3.227 \times 2} = + 5.73^\circ$$