終りに臨み材料を提供された小川香料株式会社の田中、八木、池田の諸氏に対し紙上より感謝の意を捧げる。
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Summary

Effect of the oil of *Thuja dolabrata* and its components on pathogenic and non-pathogenic hyphomycetes was tested. Of the several components of this oil, hinokitiol was the most effective, being effective up to 64,000 to 128,000 dilutions against *Trichophyton*, *Epidermophyton*, and *Anchorion*, followed by *l*-rhodinic acid and thujopsol. Non-pathogenic fungi were found to be very resistant and hinokitiol was effective only in 8,000~16,000 dilutions. Based on the assumption that the antifungal action of hinokitiol was due to its formation of complex salts, effect of its iron, zinc, and copper salts were tested and it was found that, as in the case of oxine, the addition of iron complex resulted in complete invalidation, while that of zinc complex reduced the effect to one-quarter, and the addition of copper complex failed to bring out any difference. This specificity of the copper complex was assumed to be due to its substitution with the iron complex, as in the case of oxine.

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50. 藤川福二郎, 中島邦夫, 徳岡曉正, 人長有平*, 尾松徳五郎, 隅山 陣, 柏木光明** :
試験管内に於ける諸種有機化合物の抗菌作用に関する研究 (第6報¹⁾)

Fukujiro Fujikawa, Kunio Nakajima, Akimasa Tokuoka, Yuhei Hitosa,*
Tokugoro Omatsu, Tamuro Sumiyama, and Mitsuaki Kashiwagi** :

Studies on the Antibacterial Activity of Some
Organic Compounds *in vitro*. VI.

(Kyoto College of Pharmacy* and Department of Microbiology, Kyoto Pref. Med. University**)

今回報告する化合物は第5報¹⁾迄の化合物の中で黄色葡萄球菌 209 P 株, *Staphylococcus aureus* 209 P 株, 普通大腸菌 *Bactrium coli communior* 及び枯草菌 *Bacillus subtilis* の何れかに対し強い発育阻止力を示した化合物 13 種に就いて表中の各種の菌 24 種に対する発育阻止力を吟味した結果を報告するが, その結果は Table 1 の通りであり, 特筆するような強い発育阻止力は示さなかつたが *Streptococcus hemolyticus* (溶血性連鎖球菌) に対し (I), (IV), (VI), (VIII) は 160,000 倍の濃度で, (III), (V), (VII), (IX), (X), (XII) は 80,000 倍の濃度で完全に発育を阻止し, *Diplococcus* (or *Streptococcus*) *pneumoniae* type I (肺炎双球菌 I 型) に対しては (I), (IV), (VIII) が 160,000 倍の濃度で, (V), (VI), (X), (XI), (XII) は 80,000 倍の濃度で完全に発育を阻止しており, *Bacillus anthracis* (炭疽菌) に対しては (I), (VII), (VIII), (XII) 及び (XIII) が何れも 80,000 倍の濃度で完全に発育を阻止している. 尚 13 種の化合物の中で (XII) の Sphaerophorin が表に示すように 6 種の菌を除いて他の各種の菌に対し 80,000 倍ではあるが, 一様に完全に発育を阻止している事が本報で特に記す可き点であると思われる. なお培地は pH 7.2 の普通ブイオンを用いたが, 唯 *Streptococcus hemolyticus* 及び *Diplococcus pneumoniae* type I は 1% 葡萄糖ブイオンを, *Brucella melitensis* は pH 7.2 の肝ブイオンを用いた.

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1) 第5報: 本誌 73, 740 (1953).

終りに本研究における京都府立医科大学微生物学教室鈴木成美教授の御指導に對し, 又実験に協力された京都薬大衛生学教室馬場マヌ氏に對して併せて深甚の謝意を表す。

Table I

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
1. <i>Staphylococcus aureus</i> 209 P	640,000*160,000	160,000	640,000	640,000	320,000	320,000	320,000	640,000	160,000	320,000	160,000	160,000	10,000
2. <i>Streptococcus hemolyticus</i>	160,000	40,000	80,000	160,000	80,000	160,000	80,000	160,000	80,000	80,000	40,000	80,000	20,000
3. <i>Dipterococcus pneumoniae</i> type I	160,000	40,000	40,000	160,000	80,000	80,000	40,000	160,000	40,000	80,000	80,000	80,000	20,000
4. <i>Bacillus anthracis</i>	80,000	40,000	40,000	40,000	40,000	40,000	80,000	80,000	40,000	40,000	20,000	80,000	80,000
5. <i>Bacillus subtilis</i>	640,000	160,000	80,000	640,000	80,000	80,000	20,000	320,000	80,000	160,000	40,000	160,000	160,000
6. <i>Bacterium coli communior</i>	<10,000	10,000	10,000	10,000	10,000	10,000	20,000	<10,000	<10,000	10,000	10,000	160,000	<10,000
7. <i>Bacterium coli commune</i>	10,000	10,000	10,000	10,000	10,000	20,000	20,000	<10,000	<10,000	10,000	10,000	80,000	<10,000
8. <i>Salmonella typhi</i> V type	20,000	10,000	10,000	10,000	10,000	10,000	20,000	<10,000	10,000	10,000	<10,000	80,000	<10,000
9. <i>Salmonella typhi</i> O type	10,000	<10,000	<10,000	10,000	<10,000	10,000	10,000	<10,000	10,000	<10,000	<10,000	80,000	<10,000
10. <i>Salmonella typhi</i> H type	20,000	10,000	10,000	10,000	10,000	10,000	20,000	<10,000	10,000	10,000	<10,000	80,000	<10,000
11. <i>Salmonella paratyphi</i> A	<10,000	10,000	10,000	10,000	10,000	10,000	20,000	<10,000	10,000	10,000	<10,000	20,000	<10,000
12. <i>Salmonella paratyphi</i> B	40,000	40,000	40,000	20,000	20,000	40,000	20,000	<10,000	10,000	10,000	10,000	80,000	10,000
13. <i>Salmonella enteritidis</i>	<10,000	10,000	10,000	10,000	10,000	20,000	20,000	<10,000	10,000	10,000	<10,000	40,000	<10,000
14. <i>Salmonella moscow</i>	20,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	<10,000	<10,000	40,000	<10,000
15. <i>Salmonella typhi-murium</i>	10,000	20,000	10,000	10,000	10,000	20,000	20,000	<10,000	10,000	10,000	<10,000	80,000	<10,000
16. <i>Salmonella dublin</i>	20,000	20,000	20,000	10,000	10,000	10,000	20,000	10,000	10,000	10,000	10,000	80,000	<10,000
17. <i>Shigella dysenteriae</i> type 1	20,000	10,000	10,000	10,000	20,000	20,000	40,000	<10,000	10,000	20,000	<10,000	80,000	<10,000
18. <i>Shigella sonnei</i>	10,000	10,000	10,000	10,000	20,000	10,000	20,000	10,000	10,000	10,000	<10,000	80,000	<10,000
19. <i>Shigella dysenteriae</i> type 2	20,000	20,000	20,000	10,000	10,000	20,000	20,000	<10,000	10,000	10,000	10,000	80,000	<10,000
20. <i>Shigella flexneri</i> type 2	10,000	20,000	10,000	10,000	10,000	10,000	20,000	<10,000	10,000	10,000	<10,000	80,000	<10,000
21. <i>Shigella flexneri</i> type 6	20,000	40,000	40,000	20,000	40,000	40,000	40,000	<10,000	10,000	<10,000	20,000	80,000	10,000
22. <i>Vibrio cholerae</i>	40,000	40,000	40,000	20,000	40,000	40,000	20,000	<10,000	10,000	20,000	<10,000	80,000	10,000
23. <i>Brucella melitensis</i>	20,000	20,000	20,000	20,000	20,000	40,000	40,000	<10,000	10,000	20,000	10,000	80,000	10,000
24. <i>Proteus vulgaris</i>	<10,000	10,000	10,000	<10,000	10,000	10,000	10,000	<10,000	<10,000	<10,000	<10,000	80,000	<10,000
25. <i>Pseudomonas aeruginosa</i>	<10,000	20,000	20,000	10,000	10,000	10,000	20,000	<10,000	10,000	10,000	20,000	20,000	10,000
26. <i>Bacterium prodigiosum</i>	10,000	10,000	10,000	<10,000	10,000	10,000	20,000	<10,000	10,000	<10,000	<10,000	40,000	<10,000
27. <i>Klebsiella pneumoniae</i>	40,000	40,000	20,000	10,000	10,000	20,000	10,000	<10,000	<10,000	10,000	10,000	20,000	<10,000

* 表中の数字は何れも完全発育阻止濃度を示す。

6-Chlor-4-heptylresorcin

6-Chlor-4-hexylresorcin

6-Chlor-4-cyclohexylresorcin

o-Chlor-p-thymolrhodanid

2-Chlor-4-acetylthymol

p-Nitrothymol

p-Nitrosophenol

2,4-Dioxy-3-chlor-5-hexylbenz-aldehydthiosemicarbazonal

2,4-Dioxy-3-chlor-5-amylobenz-aldehydthiosemicarbazonal

Olivetolcarbonsäurepropylester

p-Chinondichlorimid

Sphaerophorin

Divaricatsäure

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Summary

Growth inhibitory action against 24 kinds of bacteria, including *Streptococcus hemolyticus*, *Diplococcus pneumoniae* Type I, and *Brucella melitensis*, were tested with 13 kinds of compounds reported in Parts I to V of this series which showed strong growth inhibition against *Staphylococcus aureus* 209 P, *Bacillus coli communior*, and *Bacillus subtilis*. None of them showed a very strong growth inhibition but 6-chloro-4-heptylresorcinol, 2-chloro-3-methyl-4-thiocyano-6-isopropylphenol, *p*-nitrothymol, and 2,4-dihydroxy-3-chloro-5-hexylbenzaldehyde thiosemicarbazone were able to completely inhibit the growth of *Streptococcus hemolyticus* at 160,000 dilution, 6-chloro-4-cyclohexylresorcinol, 2-chloro-4-acetylthymol, *p*-nitrosophenol, 2,4-dihydroxy-3-chloro-5-amylobenzaldehyde

thiosemicarbazone, propyl olivetolcarboxylate, and sphaerophorin in 80,000 dilution. 6-Chloro-4-heptylresorcinol, 2-chloro-3-methyl-4-thiocyano-6-isopropylphenol, and 2,4-dihydroxy-3-chloro-5-hexylbenzaldehyde thiosemicarbazone completely inhibited the growth of *Diplococcus pneumoniae* Type I in 160,000 dilution, and 2-chloro-4-acetylthymol, *p*-nitrothymol, propyl olivetolcarboxylate, *p*-quinonedichloroimide, and sphaerophorin in 80,000 dilution. 6-Chloro-4-heptylresorcinol, *p*-nitrosophenol, 2,4-dihydroxy-3-chloro-5-hexylbenzaldehyde thiosemicarbazone, sphaerophorin, and divaricatic acid completely inhibited the growth of *Bacillus anthracis* in 80,000 dilution. It should be noted that, as shown in the accompanying Table, sphaerophorin was the only one among the 13 compounds tested which was able to uniformly inhibit the growth of the bacteria tested, except six, although in 80,000 dilution.

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51. 森 五彦, 木村睦男: ペーパークロマトグラフ分析法の研究 (第8報*)

沝紙電気泳動に於ける泳動値に及ぼす諸条件に就いて その1

Itsuhiko Mori and Mutsuo Kimura: Studies on Filter Paper Chromatographic Analysis. VIII*. Conditions for Paper Electrophoresis. (1).

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沝紙電気泳動法は沝紙クロマトグラフィーで殆んど分離出来ない物質を容易に分離し、而もその分析時間が短く、特にテセリウス装置で取扱ひ得ない微量物質までも分析出来る為現在^{1,2)}注目されているが、泳動値に及ぼす諸条件が頗る多く、その使用に著しい支障を来たしている。即ち電解質溶液の種類、イオン強度、電気滲透圧、温度、沝紙の傾斜に基づく種々の現象、電極に於ける分極の影響と電解液の量、沝紙の種類、電圧と電流等であり、これらの条件を一定にして泳動を行わねばならない。このうち電圧と電流はオームの法則に従い切り離して考えることは不可能であり、若し定電圧、或いは定電流を用いるならば他方は必然的に定まる。定電圧は定電流に比し発生装置の關係上殆んど100%の正確さを期待する事が出来るので筆者等はまず定電圧を用い低分子物質、特に植物塩基³⁾、糖、フラボノイド類⁴⁾、食用色素等を取扱ひ概ね良好な結果を得た。又電流を多量に流す時はその流動値が乱れ、必ずしも分離が良いとは限らなかつたが電圧は高い程良い分離能を示した。又実験中はpHの変化を来たさぬ緩衝液が望ましいが一般にこれらは、ナトリウム、カリウム等の塩類を含み電流が流れ易く高圧を用いるには不便であつた。なおトリテルペン類の分離⁵⁾に於いて酢酸々性ブタノール(5:4:1)、或いはフェノール、硼砂(9:1)等の有機性溶媒を電解液とし用い、600 V 0.03 mA/cm、又は0.01 mA/cm程度の電流で良好な結果を得た事は甚だ興味深い。

図(Fig. 1, 2)は電圧の上昇と共に移動距離が上昇して行く關係を示したものであるが、或一定距離までは直線的に増加して行く事を示している。そして電解液槽に近づくにつれて泳動値は次第に減少して行く。これは電気滲透圧その他の影響によるものであろう。

Table Iは食用色素類について取扱つた例を示すもので、これらの色素は顯色の必要がなく移動の状態を良く観察し得るので実験の手始めとした。

* 日本薬学会近畿支部例会講演(1952年12月);第7報: Nature **170**, 975 (1952).

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1) 桑野重昭: 未発表. 2) 小林茂三郎: 未発表.

3) 刈米, 橋本, 森, 木村: 本誌 **73**, 805 (1953). 4) 刈米, 橋本, 森, 木村: 本誌 **73**, 1097 (1953).

5) 橋本: Experientia: **IX**, 194 (1953).