Blendor» together with active carbon (Norit) in a 2 % solution of sodium carbonate. The extract was then immediately filtered two times through large amounts of active carbon. (The enzyme which breaks down polymetaphosphate has its optimum activity at pH 5—6, which has been demonstrated in our other experiments[6]. It is therefore of importance to keep a rather high pH during the extract ion. In the filtration through active carbon the enzyme, which breaks down polymetaphosphate, and of course other organic substances, are removed. At low and high pH the spontaneous breakdown velocity of polymetaphosphate is considerable[2, 7]. It is therefore of importance that the pH of the extract is not made too low or too high.) The clear extract was then dialyzed in a cellophane bag against distilled water for 2 days at 4° C. The extract was then evaporated *in vacuo* at 30° C to about 1/50 of its original volume. The concentrated solution was then filtered again through a small amount of active carbon. Then the solution was dialyzed again one day at 4° C. The solution was then frozen and dried *in vacuo* in the frozen state. A small amount of a white powder was obtained.

This non-dialyzable substance contained 25 % P. (Determined after hydrolysis with sulphuric acid according to Lowry and Lopez[8].) A solution of the substance was investigated in the Beckman spectrophotometer. The characteristic absorption of nucleic acids in ultraviolet could not be observed. (The isolated substance contained less than 0.5 % nucleic acid.) The substance contained 15 % Na (determined by W. Kirsten). The carbohydrate content was less than approximately 5 % determined with the orcinol method. The nitrogen content was low, less than 1 %. A small fraction was heated in a crucible. The ash content was 85 %.

The substance was investigated in the Svedberg ultracentrifuge. The experiments were carried out with 1.5 % and 0.5 % of the substance in a buffer solution with the following composition: 0.025 *M* Na_2HPO_4, 0.025 *M* NaH_2PO_4 and 0.10 *M* NaCl. The »ultracentrifugation diagrams» showed a sedimenting substance, which was polydisperse. Most of the substance could be recovered as sedimenting material under the »peak» of the centrifugation diagram. The calculated sedimentation constants were 2.2 and 2.3 Svedberg units for the 1.5 and 0.5 % solutions.

It seems most probable that the isolated substance is a somewhat impure, high molecular sodium polymetaphosphate, *i. e.* an inorganic colloid.

The author wish to thank Prof. T. Svedberg and Prof. A. Tiselius for the privilege of carrying out this work in their laboratories. I am also grateful to Miss A. Karlsson and Mrs. M. Hårsta for their assistance with the laboratory work and to fil. kand. H. Malmgren for valuable discussions.

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2-(Diphenylmethoxymethyl)-imidazoline, a New Potent Antihistamine Agent

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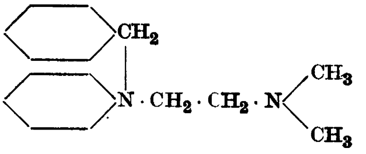
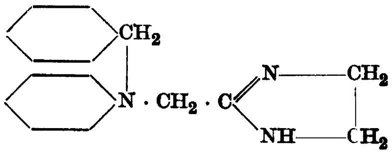
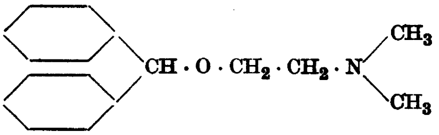
Ever since the discovery of the first synthetic therapeutically effective antihistamine agent[1], N-phenyl-N-benzyl-N', N'-dimethyl-ethylenediamine (Antergan; I), this field has been made the object of eager investigation. Thus Miescher, Klarer and Urech[2] found that the histaminolytic effect was strongly increased by the exchange of the dimethylaminomethyl group of Antergan for an imidazoline group. The compound thus formed is 2-(N-phenyl-N-benzylaminomethyl) - imidazoline (Antistin; II).



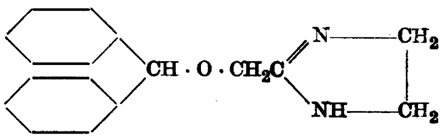
I. *Antergan.*



II. *Antistin.*



III. *Benadryl.*



IV.

Another compound of a somewhat different type, which has an antihistamine effect comparable with that of Antistin [3, 4], is β-dimethylaminoethyl benzhydryl ether (Benadryl; III).

Also in this laboratory we have been working with synthetic antihistamine compounds since the middle of the year 1946. As the exchange of the dimethylaminomethyl group in Antergan for imidazoline yielded a compound with a strongly increased effect, it seemed to us to be worth while investigating whether a similar substitution in Benadryl could yield a compound with a still better effect than that of any of the compounds mentioned above.

We have succeeded in preparing this compound, 2-(diphenylmethoxymethyl)-imidazoline (IV), as well as a series of allied compounds. We had not intended to publish the results until our experiments were quite completed, but on account of a communication by an Italian author[5], with some pharmacological data concerning compound IV, we feel obliged to publish the mode of synthesis, which is not mentioned in the Italian publication.

Compound IV is prepared by treating the sodium salt of benzohydrol with 2-(chloromethyl)-imidazoline hydrochloride.*

Preliminary pharmacological investigations show that as an antihistamine agent it is at least as strong as Antistin and Benadryl.

Complete chemical and pharmacological data concerning this and a number of allied compounds will be published later.

2-(Diphenylmethoxymethyl)-imidazoline. 18.4 g (0.1 mole) of benzohydrol was dissolved in 75 ml dry toluene, and 2.3 g (0.1 mole) of powdered sodium was added. The mixture was warmed with stirring for two hours at 50° C, and then for a further two hours at 105° C when the sodium metal was gradually consumed. After cooling to roomtemperature, 8.75 g (0.05 mole) of 2-(chloromethyl) - imidazoline hydrochloride[6] was added. The mixture was warmed at 60° C for 1 hour and 15 minutes with

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* Swedish patent application has been made.

vigorous stirring. After cooling, the separated sodium chloride was filtered off, and the ice-chilled filtrate was precipitated with a saturated solution of dry hydrogen chloride in toluene, until no more precipitate was obtained. The precipitate, which was white and crystalline, was sucked off and washed with a little petroleum ether. The raw product contained about 20 % NaCl, which was removed by dissolving the hydrochloride in alcohol, filtering off the salt and precipitating the hydrochloride with petroleum ether. The yield was 6.7 g (44 %). After recrystallization from alcohol the pure 2-(diphenylmethoxymethyl)-imidazoline hydrochloride melted at 203—205° C.

$C_{17}H_{18}N_2O \cdot HCl$ (302.8)

Calc.	N	9.25	Cl	11.7
Found	»	9.2	»	11.7

The free base was obtained by dissolving the hydrochloride in water and precipitating with *N* NaOH. This yielded an oil, which soon hardened into white crystals. After recrystallization from alcohol it melted at 102—103° C.

$C_{17}H_{18}N_2O$ (266.3)

Calc.	N	10.5	eq. wt.	266.3
Found	»	10.6	»	267.2 (titr. with 0.1 *N* H_2SO_4 with methyl red as indicator).

With picric acid the base gave a picrate with m. p. 202—204° C.

The hydrochloride was very soluble in water and gave a stable solution. If the solution was acidified with hydrochloric acid it almost immediately disintegrated into benzohydrol and 2-(hydroxymethyl)-imidazoline hydrochloride.

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Substituted Benzyl Alcohols as Lignin Models

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In the discussions on the nature of the reactive group in lignin responsible for its sulphonation with sulphite cooking acid different model substances have played an important *rôle*. The model substances hitherto studied are subject to two fundamental objections. They either react far to slow or contain groups which, obviously, do not occur in lignin, at least not to such a degree that they can be responsible for the sulphonation reaction. It has recently been shown that it is possible to introduce 1.3 sulphonic acid groups on each »lignin unit» (1 methoxyl) [1].

Unpublish results of Erdtman and Lindgren [2] appear to show that the sulphonation which occurs in technical sulphite cookings and which results in the formation of lignin sulphonic acids with the ratio $SO_3H/OCH_3 = {}^1/_2$ is due to a substitution of hydroxyl groups of outstanding reactivity.

Holmberg [3] showed in an important paper that α-phenethyl alcohol reacts with sulphite cooking acid with formation of α-phenethyl-sulphonic acid $C_6H_5 \cdot CH(OH) \cdot CH_3 \rightarrow C_6H_5 \cdot CH(SO_3H) \cdot CH_3$. Kratzl and Däubner [4] point out that the