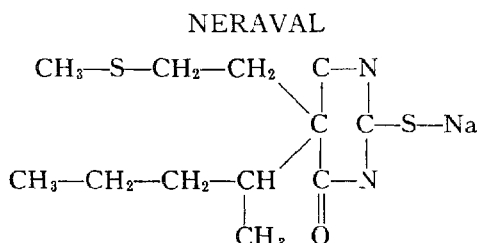


# NERAVAL SODIUM®: A CLINICAL INVESTIGATION

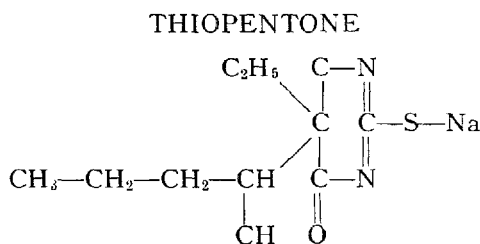
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NERAVAL SODIUM® is a synthetic organic compound of the group of ultra short-acting barbiturates. Utilizing a supply made available by the Schering Corporation, Neraval has been administered to eighty patients, ranging in age from sixteen to eighty years.

The following formulae show the structural relationship of Neraval® to thiopentone—



Sodium Salt of methyl-thio-ethyl-methyl-butyl-thiobarbituric acid



Sodium Salt of ethyl-methyl-butyl-thiobarbituric acid

The methyl thio-ethyl radical  $\text{CH}_3\text{—S—CH}_2\text{—CH}_2$  is present in methionine, an amino acid, which plays a role in the detoxification processes of barbiturates. This fact is mentioned in the literature of Neraval Sodium as being significant in making Neraval the shortest of the ultra short-acting barbiturates. In the investigation this was the point of first consideration.

Neraval is dispensed in rubber-stoppered bottles containing three grams of pale yellow powder. Upon the addition of 60 cc of distilled water a transitory sulphurous odour is noted. The powder dissolves fairly readily when open to the air. In this manner a 5 per cent solution is prepared for intravenous injection—performed in the same manner as with 2½ per cent thiopentone. A white precipitate is formed with curare and anectine which disappears on addition of excess Neraval solution.

Initially in this investigation Neraval was used alone for minor procedures requiring only sleep and minimal relaxation, and thus its action was judged without the presence of other complicating agents. About thirty-five cases for uterine curettage, intra-vaginal and intra-uterine radium insertions, drainage of abscesses and manipulation of fractures were handled in this manner. The first

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few patients woke up on the operating table or immediately on reaching the recovery room. This observation was of great interest but unfortunately was short-lived. Subsequently, some patients were found to require very little Neraval for the procedure but slept for half an hour afterwards, while others receiving up to two grams for a more stimulating procedure awoke immediately on returning to bed.

Although the usual sleep dose was about 500 mg., another 200–300 mg. would be required before the procedure was over and often a total of one gram was used for a fifteen-minute minor operation.

It was found that although dose for dose slightly more Neraval is required to produce the same anaesthetic effect as with thiopentone there is little difference between a 5 per cent solution of Neraval and a 2½ per cent solution of thiopentone. Several exceptions, however, were experienced by one investigator. Of the 45 cases conducted by this investigator, approximately 25 per cent of the patients coughed during induction and some so severely that they required an additional 200 mg of Neraval or an effective dose of a relaxant. Seven patients of the 45 developed hiccoughs during induction—with four of these, they lasted throughout the twenty-minute procedure, while one patient hiccoughed for seven hours following operation. Of the 80 patients, vomiting and retching occurred in five during induction and severe masseter spasm in two. Usually jaw relaxation was good although the false and true cords would appose on spraying. Laryngospasm occurred in four of the series but this may have been caused by premature surgical preparation of the patient. Hypotension was no more remarkable than with any other barbiturate, nor were there pulse changes. Depth of respiration was slightly reduced with sleep doses. The respiratory rate was slightly increased. Spirometry tracings recorded on three patients demonstrated these points very clearly.

A metallic taste on induction was noticed by several patients and a stinging in the vein on injection was experienced by six.

Postoperatively, vomiting occurred in two cases after twelve hours. No hypotension, no venous reaction or local thrombosis, no headache or pulmonary complications were observed or recorded in the patients up to 24–48 hours after operation. Ten patients examined 20 hours after operation were found to be negative for albuminuria and haematuria. Three patients who had had several thiopentone and nitrous oxide anaesthetics previous to the Neraval anaesthetic stated that they felt fine after the operation and during the remainder of the day whereas, previously, after thiopentone, they had felt drowsy until the following day.

#### SUMMARY AND CONCLUSIONS

Eighty patients were anaesthetized with Neraval Sodium, 35 of whom received no other anaesthetic agent. In the remainder of cases the procedures were more major neurological, orthopaedic, gynaecological, abdominal, ear, nose and throat or eye operations and these patients received Neraval for induction and in some cases intermittently throughout the operation, as well as other agents for maintenance.

The conclusion reached was that the drug is similar to the commonly used ultra short-acting barbiturates in its action but that the drug exerts a parasympathetic action as manifested by hiccoughing, coughing, retching and laryngospasm in an appreciable number of patients. It could not be demonstrated in this series that Neraval was the shortest acting of the ultra short-acting barbiturates.

#### RÉSUMÉ

Nous avons employé, chez 80 malades de 16 à 80 ans, le Neraval Sodium, un nouveau composé synthétique organique, appartenant au groupe des barbituriques à action très courte

Nous avons employé une solution à 5 pour cent tout comme on le fait pour le thiopentone. Les chercheurs ont observé peu de différence dans la réaction clinique des malades quand ils employaient une solution de thiopentone à 2½ pour cent ou une solution de Neraval à 5 pour cent. Toutefois, un des chercheurs a l'impression que, avec le Neraval, il survient une prédominance parasympathique plus fréquemment qu'avec le thiopentone, cette prédominance se manifeste par du hoquet, de la toux, des haut-le-cœur et des laryngospasmes. Ce sont les seuls effets indésirables observés. Nous n'avons pu établir si l'action du Neraval était plus courte qu'aucun des autres barbituriques à action rapide.