VRIES et al.[24], MAMMEN[5]), are associated with increased kinin formation.

Obviously all changes in plasma kininogen and blood kinin during different phases of open heart surgery are caused by haemodilution. In fact the average values (in %) of protein (pr) are highly correlated to kininogen (kg) and kinin (kn): $r_{pr-kg} = 0.96$, $r_{pr-kn} = 0.98$; $p < 0.01$.

It has already been shown that activation of endogenous plasmin by streptokinase in human plasma led to kinin formation only, if the protease inhibitors are widely eliminated (SEIDEL et al.[25]). A comparable situation does not exist in vivo. Probably plasmin once activated is inactivated so rapidly (FISCHER[1]), that it does not cause an increase of kinin liberation. Indeed HAMBERG[26] and HAUSTEIN and MARKWARDT[27] found a plasmin dependent formation of kinins in human plasma, but HAMBERG destroyed protease inhibitors by acidification for a certain period of time and HAUSTEIN and MARKWARDT put additional plasminogen into their plasma incubates. Although BULUK et al.[28] found an activation of the fibrinolytic and the kinin system during venostasis, these results do not prove a systemic formation of kinins in the course of enhancement of the fibrinolytic potential.

The results presented are in contrast to WIEGERSHAUSEN et al.[15]. Unfortunately it is not possible to discuss their communication in detail because they did not measure the degree of haemodilution in their patients. Moreover, they did not inform about the volume of perfusion which, being small, leads to a larger extent of fibrinolysis activation than being high (VON KAULLA and SWAN[3]).

Possibly the controversial results are due to different types of oxygenators used in extracorporeal circulation. In WIEGERSHAUSEN's study a disc oxygenator was applied, which was observed to cause a stronger activation of fibrinolysis than a bubble oxygenator (EKERT et al.[29]). In addition the denaturation of γ-globulins in disc oxygenators (PRUITT et al.[30]) possibly leads to liberation of kinins (BOREHAM and GOODWIN[31], MOVAT[32,33]).

Zusammenfassung. Bei 10 Patienten, die sich einer Operation am offenen Herzen unterzogen, verliefen die Plasmakininogen- und Blutkininspiegel parallel zum Plasmaprotein. Das spricht gegen eine exzessive Aktivierung des Kinin-bildenden Systems im Plasma während extrakorporaler Zirkulation.

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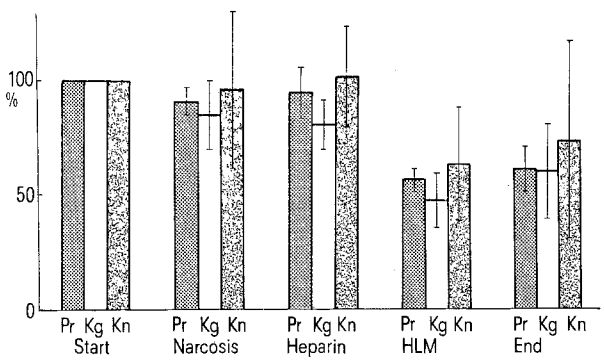

Fig. 2. Total plasma protein (Pr), kininogen (Kg) and kinin (Kn) during various phases of open heart surgery. Values before (start) and after induction of anaesthesia (narcosis), following heparin injection (heparin), during extracorporeal circulation (HLM) and after termination of bypass (end). Average values ± S. D. ($n = 10$).

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Saccharin Preference of Butyraldoxime-Treated C57BL Mice

Butyraldoxime, chronically administered via the drinking fluid, has been shown to elicit the following in C57BL mice: 1. marked blockade of hepatic aldehyde dehydrogenase, 2. accumulation of substantial concentrations of acetaldehyde in blood following an ethanol dose, and 3. pronounced decrease in the natural ethanol preference of these animals[1,2]. Since increased acetaldehyde levels can produce toxic effects[3], we have attributed the strong and sustained decrease in ethanol preference of the C57BL mice during, and after, butyraldoxime ingestion to a learned aversion based upon the noxious effects of increased acetaldehyde levels[2].

Recently NACHMAN et al.[4] reported that i.p. administration of butyraldoxime following the ingestion of saccharin is effective in producing a conditioned aversion to saccharin, i.e., reducing the saccharin intake during a test run several days later. They concluded that 'Since the substantially lower dosages used in these experiments were sufficient to cause a learned aversion to solutions other than alcohol, ...the effects on the self-selection of alcohol previously reported for ... [butyraldoxime[1]] ... are based,

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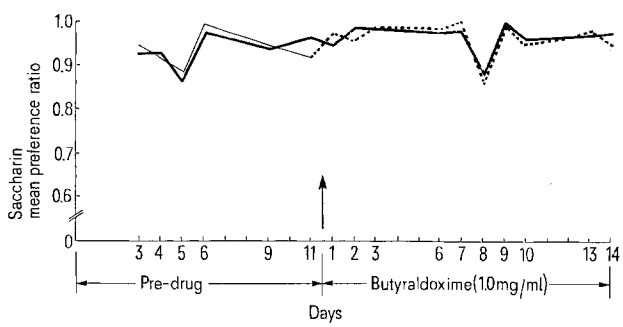
not on their specific effects with relation to alcohol, but rather on their character as noxious agents'[4].

Although the experimental procedure in the study of NACHMAN et al.[4] was quite different from ours[1,2], to clarify this point we conducted a saccharin preference experiment in C57BL mice following the same protocol used in our previous ethanol selection studies[1,2]. Salient features of our experimental design are: 1. the mice experienced, in a choice situation, the test solution for at least 11 days prior to introduction of butyraldoxime; such previous experience can significantly reduce any nonspecific conditioned aversion effects[5]. 2. Unlike the usual nonspecific conditioned aversion paradigm, our protocol included placing butyraldoxime in both drinking fluids – the water and the test solution –, so that mice received butyraldoxime regardless of which drinking cylinder they selected; this would further weaken any discrimination learning based upon a nonspecific aversion effect. It seems reasonable to assume that in an interpretation involving a nonspecific noxious agent, mice would experience noxious effects no matter which solution they drank, thereby making discrimination learning more difficult.

Twenty-four individually caged C57BL male mice were given continuous access to 2 drinking cylinders, one containing distilled water and the other a sodium saccharin solution (0.25 g per 100 ml). The left-right position of these cylinders was alternated every 1 to 3 days. The amount the mouse drank from each cylinder was recorded to the nearest ml and a preference ratio (volume of saccharin solution consumed/volume of saccharin solution consumed + volume of water consumed) was calculated. After 11 days, and for the next 14 days[6] butyraldoxime (1 mg/ml) was dissolved in both the water and saccharin drinking fluids for half the animals. The other 12 mice served as controls and were continued as before.

Both groups of mice showed a relatively stable mean preference ratio of 0.9 for the saccharin solution (Figure). Introduction of butyraldoxime (the dotted line) failed to produce any alteration in the mean preference ratio during the 14 days of butyraldoxime treatment. The lack of effect of the latter on saccharin preference is not unexpected, since no obvious metabolic interaction of butyraldoxime and saccharin is predicted. The present finding is consistent with our explanation that the pronounced decrease in ethanol preference on chronic ingestion of butyraldoxime is derived from the interaction of butyraldoxime + ethanol in vivo rather than from a nonspecific aversion effect produced by butyraldoxime alone.



Mean preference ratio of C57BL/Cum mice for a 0.25% saccharin solution as a function of time. The mean preference ratio for each group was calculated from observations made on the days indicated by number. The control group (solid line) received no drug throughout the duration of the experiment (25 days). Butyraldoxime was introduced (indicated by arrow) to the experimental group (dotted line) after the 11th day and continued for 14 days. Each group consisted of 12 mice.

Zusammenfassung. Butyraldoxim, das in C57BL-Mäusen bevorzugtes Alkoholtrinken vermindert, wurde im 2-Wahl-Vorzugsversuch in Wasser oder Saccharinlösung verabreicht und führte zu keiner konditionierten Aversion. Das Ergebnis bestätigt die Hypothese, der Butyraldoxim-Effekt beruhe auf spezifisch metabolischer Wechselwirkung mit Alkohol.

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Behavioural Effects of an Antigonadotropin, of Sexual Hormones, and of Psychopharmaka in the Pumpkinseed Sunfish, *Lepomis gibbosus* (Centrarchidae)

A description of the behaviour of several species of *Lepomis* has been given by MILLER[1], further details and a quantitative behavioural analysis on *L. gibbosus* can be found in KRAMER[2,4–6]. The i.m. injection (3×0.2 mg/g body weight after 2 days delay, respectively) of the antigonadotropin Methallibure (I.C.I. 33828, a *bis*-thiourea derivative) decreased the sexual and suppressed the nest-building tendencies in 9 males significantly (i.e. $p < 0.01$) after 5 and 3 days p.i., respectively. Two motor patterns indicating a conflict between the aggressive and the sexual tendencies, viz. opercular spreads and leading ('Jagen', KRAMER[2]) diminished significantly after 5 days and after 1 day p.i., respectively. The effects lasted at least for a period of 11 to 16 days. 4 to 5 days p.i., although not having spawned, the animals performed fanning (parental care behaviour) for 4–5 days, indicating that the gondadotropin-inhibiting effect of Methallibure is accompanied by an increase of prolactin secretion. (The stimulating effect of prolactin on parental care behaviour has been shown elsewhere: Fiedler[3]; Kramer[2]). These various effects were not observed in the 5 control males, which had been injected with the vehicle. In the testes of males perorally treated with Methallibure for 4 weeks (0.65 mg/g body wt. × day), the process of gametogenesis was suspended. The diameter of the testis tubules decreased

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