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MINISTRY OF AGRICULTURE
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**Defluorinated Rock Phosphate
as a Source of Sodium
for Broilers**

Report for 1977/78

**S. Hurwitz and
A. Bar**

**Preliminary
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DEFLUORINATED ROCK PHOSPHATE AS A SOURCE OF SODIUM FOR BROILERS

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INTRODUCTION

In a previous study (Hurwitz et al., 1974) we demonstrated the efficacy of a Na/Cl ratio in the diet, wider than that in NaCl, in improving feed efficiency. The technique involved replacing part of the dietary NaCl with either sodium bicarbonate or sodium phosphate. Since DFP is rich in sodium it was deemed of interest to check it as a possible chloride-less supplement.

METHODS*

Calcium was determined by automatic titration with EGTA, phosphate by the colorimetric determination using molybdate and Elon according to Gomori (1942), and sodium by flame photometry. The composition of the phosphate supplements is given in Table 1.

Table 1. Composition of phosphate supplements used in the study (%)

| Source | DCP | DFP |
|------------|------|------|
| Phosphorus | 16.9 | 17.6 |
| Calcium | 22.9 | 33.0 |
| Sodium | - | 5.4 |

*Dicalcium phosphate (DCP) and defluorinated rock phosphate (DFP) were obtained from Fertilizers & Chemicals Ltd., Israel, and Negev Phosphates Ltd., Israel, respectively.

One hundred and forty-four 5½-week-old White Rock males were distributed among 12 groups according to their body weight to insure similar averages and distribution of the weight among the groups. The experimental diets, detailed in Table 2, were each given to four replicate groups for a period of 2 weeks, during which body weight and feed intake were monitored. The diets were based on NRC requirements.

Table 2. Composition of the experimental diets

| Lot No. | 1 | 2 | 3 |
|-------------------------------|-------|-------|-------|
| | % | | |
| Constant ingredients* | 86.35 | 86.35 | 86.35 |
| DCP | 2.00 | - | 2.00 |
| DFP | - | 1.90 | - |
| Sodium chloride | 0.30 | 0.15 | 0.15 |
| Sodium bicarbonate | | - | 0.35 |
| Calcium carbonate (limestone) | 1.00 | 0.60 | 1.00 |
| Sorghum grain | 10.35 | 11.00 | 10.15 |

*Soybean oil meal, 31.50; soybean oil, refined, 4.50; yellow corn, 50.00; vitamin and trace mineral mixtures, commercial, 0.35.

RESULTS AND CONCLUSIONS

The results are summarised in Table 3.

Table 3. Performance of broiler chicks fed diets containing dicalcium phosphate or DFP, with adjustment of the sodium supplementation

| Lot no. | 1 | 2 | 3 | S.E. |
|-------------------------|-------|-------|-----------|-------|
| Supplement | DCP | DFP | DCP+NaHCO | |
| Body weight, g. initial | 1261 | 1258 | 1250 | 7.5 |
| final | 1952 | 1964 | 1953 | 8.5 |
| gain | 691 | 706 | 703 | 7.8 |
| Feed intake, g | 1805 | 1805 | 1809 | 10.1 |
| feed conversion | 2.612 | 2.559 | 2.572 | 0.026 |

There were no significant differences among the means with all parameters. However, the results reveal a tendency toward improved weight gain and especially improved feed efficiency with sodium bicarbonate replacement of sodium chloride on the one hand, and through the use of DFP on the other hand.

REFERENCES

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Hurwitz, S., Cohen, I., Bar, A. and Minkov, U. 1974 Poultry Sci. 53: 326-331.

דיפלואארינטד רוק פוסטשט (די.אף.פי.) כמקור נתרן לפטימים

מאת

ש" הורויץ, א' בר

ת ק צ י ר

144 אפרוחים זכרים בני חמישה וחצי שבועות הואבסו במשך
שבועיים במנות המכילות די.סי.פי., די.אף.פי. או די.סי.פי.
בתוספת נתרן ביקארבונאט להשלמת כמות הנתרן במנה.

לא נמצאו הבדלים מובהקים בכל הפאראמטרים שנבדקו: משקל
סופי, תוספת משקל, צריכת מזון ונצילות המזון. לעומת זאת, נמצאה
נסיה קלה לשיפור נצילות המזון בעופות שקיבלו די.אף.פי. או
די.סי.פי. + נתרן ביקארבונאט.

משרד החקלאות
מינהל המחקר החקלאי

המכון לבעלי-חיים

משרד החקלאות
מינהל המחקר החקלאי
בית דגן

דיפלואוריןטד רוק כוסכט
(ד! אף. פי.) כמקור נתרן
לכטימים

מאת

ש' הורוויץ, א' בר

כירסום

מקדים

מס' 762

המחלקה לפירסומים מדעיים
מרכז וולקני בית-דגן

1978