Royal Jelly supplementation induces the longitudinal growth and increases plasma growth hormone and estradiol levels in growing rats

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Background: The purpose of the present study was to examine the hormonal, histomorphometric and immunohistochemical effects on the growth plate of young rats of Royal Jelly (RJ), which is a growth supplement commonly used by parents for children. Royal jelly (RJ) is the most commonly used product of apitherapy and is in frequent use by parents as a dietary supplement for children.

Methods: A total of 30 female rats aged 7 days were randomly divided into two groups of 15. For 15 days, 50 mg/kg of RJ was administered once a day by gavage to RJ group.

Results:
1. At the end of the study, the changes of the mean weight and tail length measurements were significantly higher in the RJ group than in the control group.
2. Plasma estradiol and growth hormone levels were significantly higher in the RJ group than in the control group.
3. The total height of the growth plate in the RJ group was measured significantly higher than that of the control rats (p<0.001).
4. Estrogen receptor expression on the growth plate was stated as 81.3% in the proliferative zone of RJ group, and as 14.3% in the control group (p<0.001).

Conclusions:
1. The relatively low dose of RJ used in this study was determined to have some potential estrogenic effects on the growth plate of young rats.
2. Through the induction of GH and estradiol levels, RJ was observed to induce the longitudinal bone growth in growing rats, suggesting that oral RJ administration may have clinical potential in promoting longitudinal bone growth in children.
3. However, estrogens are also important for the cessation of growth by inducing growth plate closure and the estrogenic effect of RJ may diminish the final height potential in children.
4. It is also possible that the estrogenic effect of RJ may lead to early puberty in girls and pubertal gynecomastia in boys.