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&= F_i \\
&= E_j \\
&= P_k \\
&= (FE)_{ij} \\
&= (FP)_{ik} \\
&= (EP)_{jk} \\
&= (FEP)_{ijk} \\
&= e_{ijk}
\end{aligned}$$

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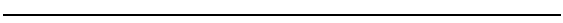
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REFERENCES

1. Annison, G. 1993. The role of wheat non-starch polysaccharides in broiler nutrition. *Aust. Ag. Res.* 44:405-422.
2. Bartove, L., S. Bornstein, & P. Budowski .1972. Variability of cholesterol concentration in plasma and egg yolk of hens and evaluation of the effect of some dietary oils. *Poult. Sci.* 50:1357-1364.
3. Carew, L. B., J. R. H. Machemer, J. R. W. Sharp, and D. C. Fass. 1972. Fat absorption by the very young chick. *Poult. Sci.* 51:738-742.
4. Farida, D., M. Mazalli, & D. Ito. 2002a. A comparison of feeding value of different sources of fatty acids for laying hens: 1. performance characteristics. 11th European Poltry Conference. Germany, Bremen.
5. Farida, D., M. Mazalli, & D. Ito. 2002b. A comparison of feeding value of different sources of fatty acids for laying hens: 2. Lipid, cholesterol, and vitamin E profile of egg yolk. 11th European Poltry Conference. Germany, Bremen.
6. Fletcher, D. L., & H. R. Halloran. 1983. Egg yolk pigmenting properties of marigold extract and paprika oleoresin in practical type diet. *Poult. Sci.* 62:1205-1210.
7. Fritz, J. C. 1962. Feeding for egg yolk color feedstuffs. *Poult. Sci.* 34:44-48.
8. Grobas, S., J. Mendez, R. Lazaro, C. D. Blas, & G. G. Mateos. 2001. Influence of source and percentage of fat added to diet on performance and fatty acid composition of egg yolks of two strains of laying hens. *Poult. Sci.* 80:1171-1179.
9. Hamilton, P. B., F. J. Tirado, & F. G. Hernandez. 1990. Deposition in egg yolks of carotenoids from saponified and unsaponified oleoresin of red pepper (*Capsicum annum*) fed to laying hens. *Poult. Sci.* 69:462-470.
10. Hamilton, P. B., & C. R. Parkhurst. 1990. Improved deposition of oxycarotenoids in egg yolk by dietary cottonseed oil. *Poult. Sci.* 69:354-359.
11. Karanajeewa, H., R. J. Hughes, M. W. Mc Donald, & F. S. shenston. 1984. A review of factors influencing pigmentation of egg yolk. *World Poult. Sci.* 40: 52-65.
12. Lall, S. P., & S. J. Slinger. 1973. Nutritional evaluation of rapeseed oils and rapeseed soapstocks for laying hen. *Poult. Sci.* 42:32-37
13. Mackay, E., J. J. Mountney, & E. C. Naber. 1963. Yolk colour Resulting from different levels of paprika extract in ration. *Poult. Sci.* 42:32-37.
14. Noble, R., & P. Penny. 2002. Egg fat. *Poult. International*, May. 41: 18-22.
15. National Research Council. 1994. Nutrient requirements of poultry. 9th ed . National Academy Press, Washington. DC.

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16. Ruff, M. D., & W. M. Britton.1976. Reduced yolk colour in layers with coccidiosis. *Poult. Sci.*55:1712-1716.
 17. SAS, 1989. User's Guide to SAS Institute. Sparks Press, Inc.,Cary, NC.
 18. Stadelman, W. J. & D. E. Pratt.1989.Composition of the hen's egg. *World's poult. Sci. j.*45:248-260
 19. Sullivan, T. w., & K. A. Holleman.1962 . Effect of alfalfa meal,corn gluten meal,and other dietary component on egg yolk color. *Poult. Sci.* 41:1474-1478.
 20. Tyczkowski, J. K., L. Jonathan, & P. B. Hamilton.1989. Influece of dietary lipid on pigmentation of young chickens. *Poult. Sci.*68:1246-1254.
 21. Weiss, J. F., R. M. Johnson, & E. C. Naber, 1967. Effect of some dietary factors and drugs on cholesterol concentration in egg and plasma of hen. *J. Nut.* 91:119-128
 22. zak, B. 1977. cholesterol methods. A review. *Clin. Chem.* 23:1201
 23. zak, B. 1980. cholesterol methodology in human studies. *Lipids.*15:698

