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INFLUENCE OF NATURAL PIGMENTS ON EGG QUALITY AND YOLK COLOUR INTENSITY - A REVIEW

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➤ Introduction

- ❖ The first indicator of yolk quality is colour, which often comes in third place among factors affecting egg quality, behind freshness and eggshell quality (Englmaierová et al., 2014). For consumers, the quality and colour of the yolk are important factors for egg selection (Berkhoff et al., 2020). Because hens are unable to synthesise pigments, the colour of their eggs is dependent on the presence of carotenoids in their diet (Karadas et al., 2006).
- ❖ Eggs are being researched as a functional food since the diet of the laying hens can influence the composition of the egg yolk (Zaheer 2015). In the human food chain, eggs improved with natural pigments are preferred because of their numerous benefits for health (Spasevski et al., 2017).
- ❖ Natural pigments are becoming more popular as consumers' concerns over artificial ingredients for livestock and food products have grown. An excellent substitute for synthetic pigments include algae, bacteria, tomato waste powder, marigold extract, and more others.



Positive aspects was observed when Lokaewmanee et al., (2013) supplemented a basic diet of laying hens with **red pepper extract** at 0.5%. Red pepper extract increased yolk colour to all experimental groups, and stimulated intestinal villi.



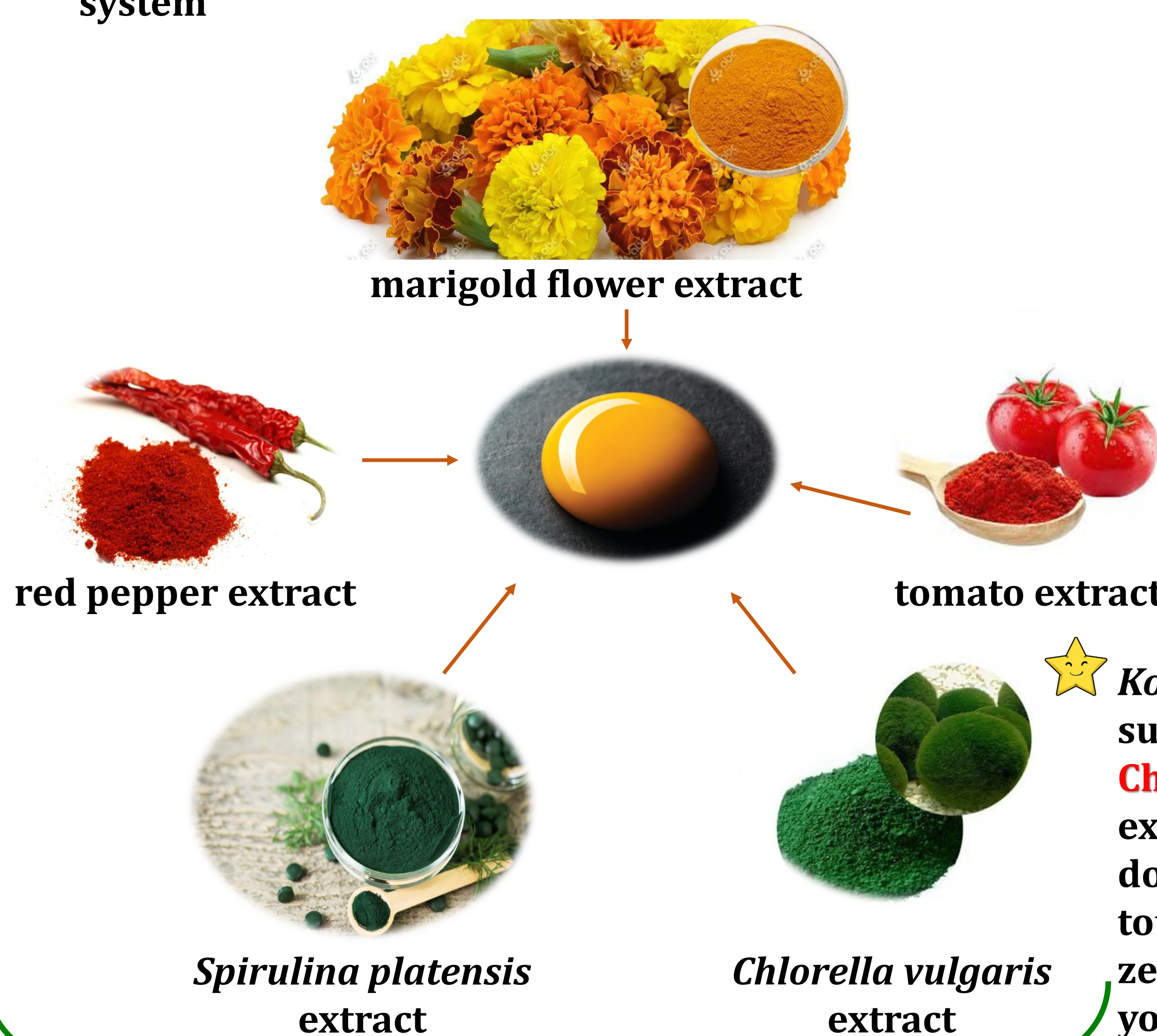
Considering Lokaewmanee's et al., (2011) experiment, **marigold flowers extract** increased yolk redness, without affecting performance parameters. The extract used in this study contained 40 mg/kg of lutein. Kljak et al., 2021 stated that marigold extract possess many active substances, such as carotenoids, which have antioxidant effect and are essential for the immune system



When Akdemir et al., (2012) added 5 or 10 g per kg basal diet **tomato waste powder** increased serum and yolk lycopene, β -carotene, lutein and vitamin A. Currently, tomato waste is either disposed of as solid garbage or fed to animals because it has little commercial use. It has been suggested that one approach to lower the cost of feeding chickens would be to use tomato waste as feed (Habanabashaka et al., 2014)



Zahroojian's et al., (2011) findings shows that added 1.5% to 2.5% **marine alga (Spirulina platensis)** in the feed of laying hens was as effective as the synthetic pigments Lucantin® Red and Lucantin® Yellow in producing a pleasing color of the egg yolk.



Kotrbaček et al., (2013) used supplement with 2% extract of **Chlorella vulgaris**, and in the 4th experimental week, Chlorella doubled the concentration of total carotenoids, lutein, zeaxanthin and β -carotene in egg yolk

➤ Conclusions



Our reports suggest that natural pigments could be used as an alternative to synthetic pigments, but economic costs must also be considered. In our review, these results are an excellent step towards encouraging poultry farmers to use natural pigments to improve egg quality and enhance egg yolk colour.

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