**Emulsifying properties of aquafaba (chickpeas brine) as egg replacement in formulation of mayonnaise**

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**Abstract**

Mayonnaise is a nutritious product that adds flavour to salads and sandwiches. Interest in egg-free mayonnaise, to address allergies and dietary flexibility is growing. The primary challenge was to find functional ingredients, which form stable emulsions comparable to egg mayonnaise. The possibility of replacing the egg yolk with aquafaba - the pulse cooking water, to form a mayonnaise-like emulsion (mafanaise) was explored, through a mixed methodology linked to relevant literature. The physicochemical properties of oil-in-water emulsions, with and without egg was compared. After 5trials, the best eggless emulsion with a mean protein content of 1.38% and a final pH of about 3.5 was obtained using 81% oil, 13% aquafaba, 4% lemon juice and 2% mustard. The apparent viscosity showed a trend under controlled shear rate at 15°C. A one-way ANOVA was employed and a significant difference was proved between apparent viscosity of samples measured at different temperatures (p<0.05). The shelf life of mafanaise, emulsion produced with aquafaba was comparable to ready-to-eat foods and suitable for piping onto salads or spread on sandwiches. Additionally, a sustainable product that brings value to the market is produced by redirecting a humus production side product from waste to the ingredient list. Aquafaba can create a value of £22872.93/day if 500 litres of aquafaba are used to produce 3835kg mafanaise. Other benefits are reduction in carbon print and reuse of a waste by-product.

**Keywords:** *Aquafaba, Chickpeas, Egg mayonnaise, Emulsifiers, Viscosity, Sustainability*

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