Enzymes and hand dishwashing; A primary ingredient for secondary claims

Abstract
Hand dishwashing has gone through something of a revolution in the past decade or two. Advertising is a great way to observe this evolution of efficacy and claims; the days of grease-cutting efficacy backed by ‘long-lasting bubbles’ and ‘kind to hands’. While these claims remain and are still relevant to consumers, they now also vie for attention alongside a host of fragrances, antibacterial options, as well as a more recent round of heightened efficacy claims. New efficacy in hand dishwashing has tended to be based around ‘no scrubbing’ or ‘the power of an overnight soak in minutes’; these are powerful claims, which have continued to make hand dishwashing relevant to households that own a dishwasher, even though automatic dishwashing encourages us not to ‘pre-rinse’. The truth is that manual dishwashing is engrained and even enjoyed by some, and the advent of heightened enzymatic functionality appears to have kept hand dishwashing relevant in what is increasingly an age of automation.

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KEYWORDS: Enzymes, engine room, secondary claims, testing, carbohydrates, sustainability.

Enzymes can very much be considered as the engine room of broadening functionality offered by a host of home care products. The fact they are also ‘natural’ (at least ‘replenishable’) and have been deployed to help push sustainability, makes them, on the face of it, quite magical ingredients.

It is little surprise then that hand dishwashing, one of the most vibrant categories in home care, has been particularly active in incorporating a broader range of enzymes, primarily in a bid to boost functionality and also (maybe less overtly) sustainability. Looking on a global level the growth of enzyme usage in dishwashing has been quite spectacular; volumes increased by a staggering 40% over the 2009-2014 period, with little sign this growth will slow as usage looks like becoming even more established in key markets such as Western Europe. It is also worth pointing out that over the same period, hand dishwashing saw a volume increase of 3%, while value gains were closer to 5%; an indication that compaction (in part enabled by enzymes) has been a key trend in hand dishwashing as with the home care market in general.

The acceptable face of drudgery?
For the vast majority of households around the world, dishwashing is a manual task, the acceptable face of domestic drudgery if you like. By comparison laundry is a highly automated process; of the two billion households worldwide in 2015, roughly two thirds of these own a washing machine. Since 1980 the possession rate has doubled, but so too has the number of households illustrating how the boom in the world’s population has gone hand and hand with machine ownership. The landscape for automatic dishwashing could not be more different, just 15% of homes were reported to own a dishwasher in 2015 meaning that for the vast majority of the world’s population, dishwashing is still very much a manual task.

There is also some evidence to suggest that even for more advanced economies such as the US and UK, dishwasher usage has actually declined, in part due to the turbulence caused by a ban on phosphates in the US and the financial crash which dented disposable income and job security and ultimately prospects for automatic dishwashing. It is also worth pointing out that the slackening of automatic dishwashing evident in some markets has come at the very same time that there has been a contrary flourishing in product development around hand dishwashing.

Kitchen sink drama
While automation in laundry and dishwashing appear to have been on two very different trajectories, there remained one key similarity, namely, consumers’ propensity to mix bouts of hand- with machine washing. Even for households that have been machine owners for decades, the tie with dishwashing being at least in part a manual task, has not been broken. Indeed, hand dishwashing has been a star performer in home care, sales topping €10 billion in 2015, (6% value CAGR 2010-2015) compared to automatic dishwashing detergents which reached €4.7 billion in 2015, (2.5% value CAGR over the same period).

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While spotless cleaning (especially on grease), long lasting suds and an appealing olfactory have been at the heart of hand dishwashing claims as far back as most can remember, the last decade or so has seen something of an arms race in terms of functionality and a broadening range of secondary claims. To restate the point, enzymes have become the engine room for the most recent round of secondary claims that hand dishwashing brands are making. To illustrate this point, P&G’s Dawn brand, arguably the first mainstream brand to introduce enzymes as standard, has managed to retain its pre-eminent position in the US hand dishwashing market, with a 44% value share in 2015. It could be argued then that the addition on enzymes has helped (in the case of Dawn) brands maintain competitive advantage and a dialogue with consumers around claims and additional benefits. Looking at the Western European market, Henkel’s Pril brand added enzymes in 2014 and saw sales grow slightly across the continent which would appear to validate the link between brand performance and enzyme usage and also perhaps insulation from competition from private labels. That said this all needs to be considered against a background of marketing activity, promotion and product availability which are all important pieces of the ‘performance jigsaw’.

Expanded product testing
Part of the drive for leading brands such as Fairy, Pril and a growing list of private label products, may well have come from what can be viewed as a formalisation of enzymatic performance in the latest round of European consumer product testing. Stiftung Warentest (StiWa), a highly respected and influential German consumer organisation, tested hand dishwashing products in 2014, the first such test in over 20 years. The introduction of a test category covering starch formalised the use of amylase in hand dishwashing detergents. Indeed of the 18 products tested 8 contained enzymes and these included top brands such as Pril along with a somewhat surprising array of private label products; once again suggesting the incorporation of enzymes is very much becoming the mainstream and no longer the periphery. After all, enzymes are not free and have implications for pricing and have become more associated with premium offerings, such as Fairly Platinum or Pril Ultra, for example. The significance of the addition of a starch-tackling component to the test speaks of a greater sophistication in products, though the deployment of enzymes is developing products more closely aligned to the multifarious cooking as well as culinary habits that exist across the continent.

Concrete and muesli
Anyone who made the mistake of leaving the remains of a bowl of muesli from breakfast in the open air can probably attest to the fact that carbohydrates, such as cereals, have a habit of drying like concrete and pasta is no different. Dishwashing products which can demonstrate efficacy on this kind of soiling may well be able to justify increased unit prices, applicability to certain markets and if nothing else, help to insulate themselves from the advances of private label which is a particular issue in Western Europe and a growing challenge in North America and even developing markets such as Mexico and Brazil. To focus on starch soiling a little longer, we might consider that Italy, with its penchant for pasta, would be a strong suit for hand wash detergents with heightened enzymatic claims of this type. The average Italian household consumes 50kg of pasta per year, with the world average being a little under 6kg. Considering that for the average UK household, ‘spaghetti Bolognese night’ is as common as ‘mac and...
it comes to diet and the inclusion of specific carbohydrates enzymes in hand dishwashing should be universally applicable.

**Dominance of immediacy**
Enzymatic claims are also significant in dishwashing as it allows manual dishwashing brands to ally themselves to prevailing trends; the trend of immediacy is an important consideration. Modern life is exemplified by this immediacy, characterised by claims of ‘fast acting’. The time consideration is a key part of how consumers measure ‘efficacy’ in this contemporary environment. This is in a sense a challenge to enzyme usage in manual dishwashing as style of manual dishwashing is many and various so in countries like the South Korea, Russia and the US, where dishes are washed under a running tap there is little opportunity for the enzymes to work most efficiently. This is where it can be argued that manual brands in Europe and the US have been promoting the quick soak and also the immediacy of grease cutting characteristics at the same time, promoting their products as something of a determining factor; rice is rarely cooked in a pan (at least at first) as rice cookers have a 90%-plus possession rate in China and Japan, for example. While manufacturers have made many efforts to make these devices easy to clean, that’s a lot of pots to wash and some types of rice are particularly glutinous, Japanese rice being one such example. Also consider rice is commonly cooked a second time in a pan which can become encrusted (due to direct heat) as well as the rice residue on bowls and cutlery, dishwashing challenges which Chinese consumers reported in similar measure to European consumers on similar carbohydrate soils in a recent consumer survey commissioned by DuPont. Away from specifics and changing diets are changing around the world, advice from WHO illustrates that for healthy diet anywhere between 55-75% of calorie intake should come from carbohydrates, so reformulation are certainly in keeping with realities (or at least ideals) of what the human diet should look like. Although there are some regional hot spots when cheese’ is in the US, the influence of Italian cooking is far reaching and might necessarily encourage development of this kind of enzymatic claim.

Considering how many pasta dishes are cooked, Italian households typically have a lot of glass wear compared to other markets. Pyrex dishes and casseroles are prevalent and reportedly get a great deal of hand washing even in households which own a dishwasher. The current crop of dishwashers and detergents struggle with baked on food, particularly carbohydrates, meaning that in Italy, something like two thirds of casserole dishes are hand washed as opposed to just a quarter in Germany, for example.

**Beyond pasta**
Culinary tradition and ingredients are at the centre of this change and it would appear sensible that Asia Pacific would have a great deal of potential due to the widespread consumption of rice, which in some cases can make up the basis of all three meals of the day. Rice cookers appear as something of a determining factor; rice is rarely cooked in a pan (at least at first) as rice cookers have a 90%-plus possession rate in China and Japan, for example. While manufacturers have made many efforts to make these devices easy to clean, that’s a lot of pots to wash and some types of rice are particularly glutinous, Japanese rice being one such example.

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Enzymes have allowed far strong power soaking claims in addition to traditional claims which speak directly to a key pain point for consumers whether they wash the dishes manually or in a machine. There is also some evidence to suggest that consumers are willing to pay for this additional functionality as doing the dishes is still time to spent on domestic rather than other tasks or more pleasant diversions.

**More with less, efficacy and sustainability**
Doing more with less is another key element of sustainability; in as much as providing consumers with this quick soaking method will inevitably save on not only time but also resources. The cumulative hours of scrubbing, re-application of detergent and continuous flow of hot water are all benefits to consumers not only in time spent but also in terms of the resources they use.

More efficient hand dishwashing, the use of automatic washing machines and the wider adoption of cold water washing in laundry care are further steps in the drive towards efficiency sustainability in the home care space, and further illustration that enzymes are in many cases the driving force not just behind secondary claims, but also the industry’s endeavours to offer consumers the seemingly magical proposition of doing more, better and with less.

Looking at laundry care in Western Europe, the push for cold water washing has been made by putting two clear ideas in the mind of consumers, namely, ‘saves you money’ and ‘saves the planet’. It is not beyond the realms of possibility that hand dishwashing could make some similar push, ‘saves you time’, ‘saves you money’ and ‘saves the planet’, quite a combination.

![Figure 3. Rice vs. Pasta Consumption Per Household Selected Markets 2015.](image_url)
Around the world, progress is making life easier. Market requirements, though, are becoming more complex and people’s demands more sophisticated.

The demands placed on textiles and surfaces are becoming increasingly wide-ranging and complex. Textiles should at the same time be waterproof, breathable, and dirt-repellent as well as maintaining their long-term stability.

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Industry Professionals: More than 10,000
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