

**Dyeing of hair
or
What's new in hair colouring?**

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Introduction

- Unilever
- Clairol
- P&G
- L'Oreal
- Henkel/Schwarzkopf

“Modern” hair colouring

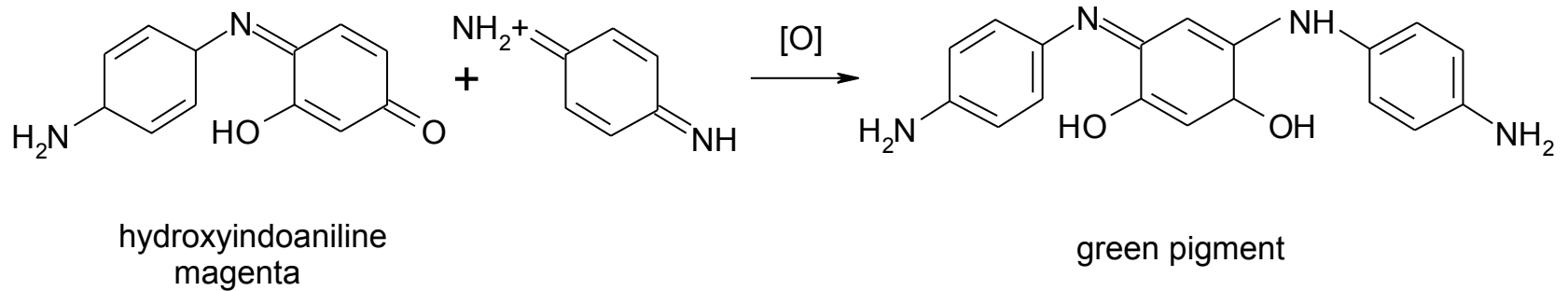
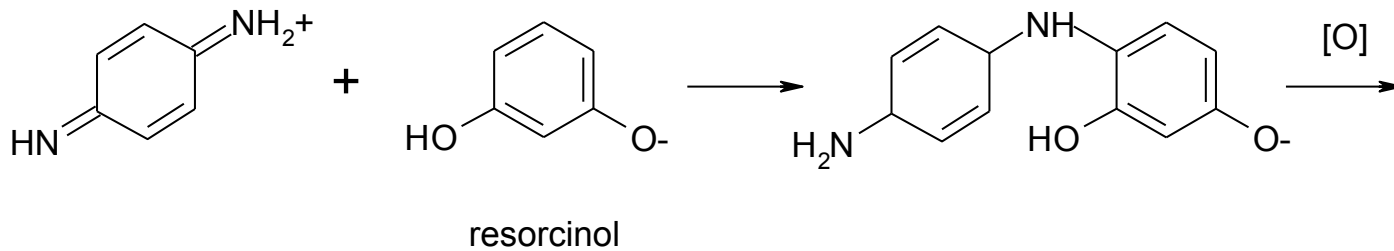


- The chemistry was discovered in the 19th century
- Hoffman working with Perkin in London discovered 1, 4-diaminobenzene (better known as PPD)
- This (PI) goes black when oxidised
- Add a 1, 3 substituted benzene to get colours
- Hydrogen peroxide discovered
- Use ammonia to get the pH up to 10-11
- The colour reaction is catalysed by hair (metal ions)
- Get the levels right & this occurs in the hair
- Permanent colour – lighter & darker shades!



Lawrence M. Gelb: 1898-1980

The reaction



What's changed?

- Purity of the dyes
- Use of slight excess of coupler
- “Better” base formulations
- Acknowledgement of safety issues
- Some “new” dyes
- Lots & lots of different marketing positions
- Nothing has yet broken the grip of PPD & the like



Why?



- PPD/PTD etc. systems work very well
- They lighten as well as darken
- Give translucent as well as heavy colour deposition
- Generally “permanent” if you want it
- Vast investment in the technologies by multinationals
- Hard market place to break into
- High R&D/safety costs
- Inability to safety test new dyes?

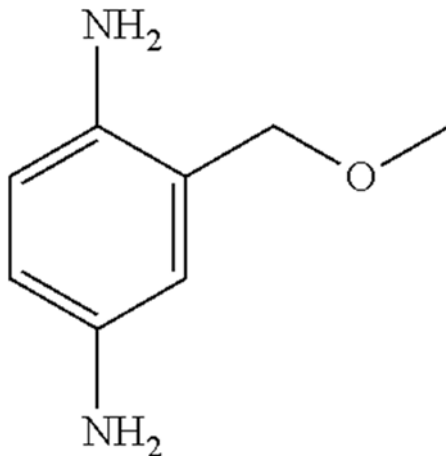


Is anything new?

- P&G/Wella/Coty dye
- P&G – EDDS for copper chelation
- P&G – Ammonium carbonate/glycine
- L'Oreal – INOA, Olia, Prodigy
- L'Oreal – new red dye
- Foams, aerosols, funny packaging
- Olaplex

“New” Wella/P&G/Coty dye

- A160 - Methoxymethyl-ppd
- A moderate sensitiser - reduced allergy risk?



- Using in Wella Koleston
- Juries out due to sale of colour brands

P&G technology

- Use of (trisodium) ethylene diamine disuccinate (EDDS)
 - Good copper chelator
- Use of ammonium carbonate/sodium glycinate
 - In Perfect 10
- Have either of these been a game changer?
- Do they beat the picture on the box as a sales aid?

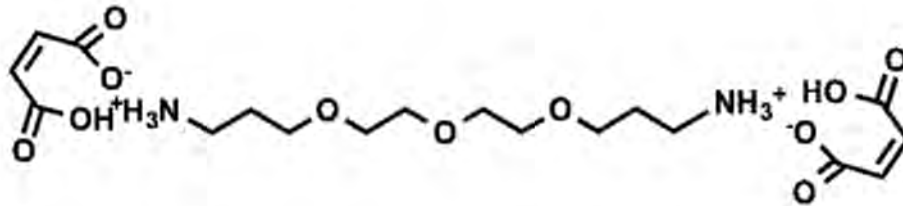
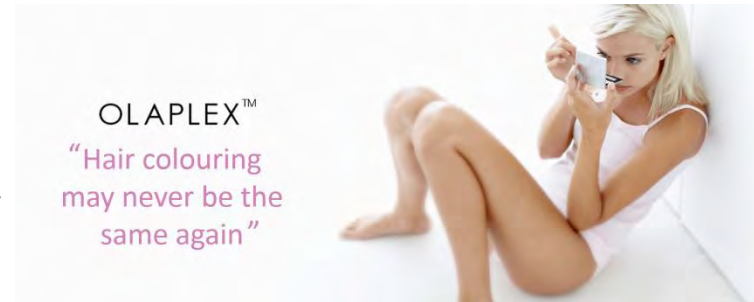
L'Oreal – INOA et al

- Innovation No Ammonia
- Non ammonia hair colour is not new
- However nothing lightens like ammonia/peroxide
- To match the alkalinity must be increased
- This increases irritation potential & damage
- To mitigate
 - Add high mineral oil level
 - Avoid charged surfactants
- Has it been successful?



Olaplex

- Is this the holy grail?
- Oxidative processes degrade hair
 - -S-S- bonds to two $-\text{SO}_3^-$ groups
- Add Olaplex to the hair colouring/bleaching system
- This claims to replace the linkage using



- Since Olaplex we have more “Plexes” than we can handle!
- What about safety assessment & insurance?

Conclusions

- Has a great deal happened in the last 100 years?
- Some things at the edges
- No major technical upheaval
- Marketing has improved no end!
- The big change could be biological?